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THE RAILWAY GAZETTE

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Capital for Oversea Railway Development

GOVERNMENTS and railway managements in the under-developed countries of the British Commonwealth which have been hoping for better opportunities of obtaining capital for railway development must have received encouragement from the Commonwealth Trade & Economic Conference in Montreal last month. The British Government proposals, put forward by the Chancellor of the Exchequer, Mr. Heathcoat Amory, whilst they facilitate borrowing, do not increase the amount of money available in that market; but Mr. Heathcoat Amory raised hopes of large loans by the United Kingdom in remarking that Britain intends to "maintain and if possible improve on" the average of £200 million annually which has been invested in the Commonwealth in recent years, and it is encouraging that the proposed assistance loans from Exchequer funds to independent countries of the Commonwealth will be associated with export orders from Britain. The United Kingdom has invited other Governments to contribute to the Commonwealth Development Finance Corporation. Canada has announced its intention to give further help under the Colombo Plan, which has done much to further railway development. Other Commonwealth countries, in some of which there is considerable capital to lend, should realise the economic importance to themselves, including their own industries, and the political importance, of developing the newly-enfranchised territories in Africa and Asia, which may be tempted by offers of help from foreign powers. The extent to which railways overseas can use capital is shown by the World Bank loans in the year ended June 30, 1958. In that period loans for railway development, to India, Nigeria, Pakistan, the Federation of Rhodesia & Nyasaland, and South Africa totalled $193 million and the Bank has just lent India a further $85 million for this purpose. Procurement of material with these loans must be open to world tender, and a proportion of orders should go to British firms. Further loans from Britain will afford more orders for the United Kingdom, because of the close association between railways in Commonwealth countries overseas and the British firms on whose knowledge, skill and workmanship they rely.

Railway Pay Review

IT is known that there is some difference of opinion between the British Transport Commission and the National Union of Railwaymen over the proposed Committee of Inquiry into railway pay. So far, the Commission has not made public the terms of reference proposed to the unions during recent discussions. An article in the September 26 issue of the *Railway Review*, presumably based on information supplied by union representatives, purports to show the reason for disagreement. The following is a summary of the *Railway Review's* report. The proposed terms of reference are twofold: the first part requires the relative pay of British Railways salaried and conciliation staff covered by negotiation machinery to be investigated in relation to comparable salaries outside the service—as a result of these comparisons, degrees of job campatibility are to be established and outside rates of pay and other relevant emuluments are to be ascertained. The second part requires the facts so derived to be presented in the form of a report to the Commission and the three railway trade unions, together with such general observations and conclusions as are considered appropriate on related matters. It is this last requirement which is the subject of union disapproval. The executive committee of the N.U.R. is of the opinion that the implications of the phrase "general observations and conclusions" do not meet their requirements.

New Zealand Difficulties

THE shortness of the hauls possible over the 3-ft. 6-in. gauge New Zealand Government Railways compared with the longer transits on other railways of the same gauge puts the former system at a disadvantage in facing road competition. The Dominion Government is now considering some form of "co-ordinating" transport, largely in view of the adverse situation of the railways; and a committee has been set up to study the matter. Addressing the annual conference in Wellington of the Railway Officers' Institute, the Minister of Railways, Mr. M. Moohan, is reported to have stated recently that the railways were losing in the struggle for traffic. They could not raise their charges without pricing themselves out of business. The problem was to determine how all the transport services could be used to the best advantage of the person who paid—the taxpayer; the answer, he maintained, undoubtedly lay in co-ordination. It is not clear whether the Minister realises that much can be done to capture traffic by better service to the railway user. Even after so much has been accomplished in New Zealand in introducing diesel and electric traction and in major civil engineering works, much more of a positive nature is surely possible.

Improving an Outlet for Rhodesia and Nyasaland

THE plans for development of the city and port of Beira, reported to have been submitted by a British consortium, will go some way to fulfil the expectations of the Portuguese Government that foreign capital would be attracted to develop the Portuguese Provinces overseas. The plans for Beira are stated to include extension of the port facilities and doubling of the railway from Beira to Dondo, where the lines to Salisbury, in Southern Rhodesia, and to Nyasaland, over the Trans-Zambesia Railway, diverge. These projects are to be welcomed in that they provide for greater capacity in the port and in the approaches to and from the hinterland, which should ease the tasks of Rhodesia Railways and of Nyasaland Railways and the T.Z.R. Signalling improvements presumably must accompany the doubling. These, and mechanical handling and other equipment in the port, should offer scope for British manufacturers.

Profiting by Indian Experience

THE essential part played by consulting engineers in interpreting the needs of railways overseas to manufacturers in the West, and in keeping those systems abreast of the latest developments, was stressed last week by Mr. J. S. Tritton at the East Indian Railway Officers' annual dinner. As a partner in Messrs. Rendel Palmer & Tritton he was instrumental in arranging for supply of locomotives from the U.S.A. to India at the beginning of the last war; he gave his audience a striking account of this episode. Not the least valuable function of the consulting engineer is his ability, and that of his representatives, to maintain personal contacts with manufacturers to an extent impossible for railway officers overseas. Another fact emphasised on this occasion was the volume of skill and experience which the officers of Indian railways took with them to other countries. Colonel Sir Ralf Emerson, Chairman, and lately General Manager of the Nigerian Railway Corporation, and a former Chief Commissioner of Railways, India, spoke of the railwaymen from India who had contributed much to Nigeria from their Indian experience in matters as diverse as ticketless travel and the stability of black cotton soil. Railways elsewhere in Africa, in Australia, and other countries have profited from this experience.

Five Hundred Railcars from Metro-Cammell

LAST week the Metropolitan-Cammell Carriage & Wagon Co. Ltd. delivered its 500th multiple-unit diesel vehicle to British Railways since deliveries began in December, 1955. The 100th vehicle was delivered in November, 1956, and the 200th was completed in May of last year. The pace of delivery, therefore, has increased. The fact that repeat orders for these railcars have been placed by the British Transport Commission with Metropolitan-Cammell speaks for itself. The 500 vehicles supplied by that firm are working in two-car units in the Eastern, in two- and three-car in the London Midland, in two-, three-, and four-car in the North Eastern, and in two-car units in the Scottish Region. In all cases they are popular with the travelling public, on a variety of services, ranging from short country branches to medium-distance interurban services. They have restored to the railways traffic which had gone to the roads, and they have created new traffic. Deliveries continue apace. They are a substantial proportion of the 2,000-odd railcars placed in service since the inception of the diesel railcar programme.

Western Region Enterprise

ILLUSTRATED and described elsewhere in this issue is an unusual and excellent example of publicity material issued by the Western Region of British Railways. This is a brochure written entirely in French for distribution in France and particularly in Paris at the present time, in connection with the International Motor Show now taking place in that city. The brochure, the first of its kind, describes the ease with which Continental travellers can journey by train from London, complete with car, to beauty spots in the West Country. The information contained in this brochure covers all queries likely to be raised by the intending tourist: times of trains and dates on which to travel; first and second class fares for adults, children, and car; facilities for day or night travel, and instructions on the making of reservations. Its production is most opportune so soon after publication of this year's report of the British Travel & Holidays Association, in which stress is laid on the need for simpler and more convenient travel arrangements for overseas visitors to Britain.

Achievements of British Railways Civil Engineers

MAINTENANCE of the finest roadbeds in the world on heavily-trafficked lines has long been known as an achievement of the civil engineers of British railways. Floods, landslips and other natural catastrophes are rare in Britain compared with those which afflict some railways overseas. The more credit is due to the civil engineering staffs by British Railways in restoring lines cut by flooding and so on. The density of traffic complicates, and makes the more urgent, tasks of great technical difficulty. Restoration of services after last month's storm in the Home Counties was the occasion of a display of remarkable skill, promptitude, and devotion to duty by the engineers of the Southern and Eastern Regions, as in recent years were floods and landslips in other parts of the country. Much of the work of restoration has been expedited by skilful use of mechanical equipment. This fact is emphasised in a recent letter to the Press by Sir J. Landale Train, quoted elsewhere in this issue.

Sliding-Roof, Sliding-Side Wagons

AN encouraging sign for the better handling of freight on British Railways in the years to come is the consideration now being given by Regional traffic officers to the SEAG sliding-roof wagon. Used for some years to the extent of 5,000 and more in five or six Western European countries, this is the only model of opening-roof wagon definitely past the experimental range; and which not only provides no mechanical problem, but for which almost a traffic and commercial science has been worked out. This sliding-roof wagon came first; but in the last two or three years it has been built as a sliding-roof sliding-side wagon, catering thus for the easy use of pallet loading as well as crane loading, for half the side can be opened at the same time as half the roof, or independently. The use of this type of wagon is primarily a commercial matter, then a traffic matter; but is no longer a carriage-and-wagon engineer subject. This being so, it is to be hoped that when the matter in England comes to a practical head, it will straight away be with an appreciable number of sliding roof and side wagons concentrated on one or two services where they will earn money, and not with odd ones sent to six Regions " to see what they can do."

Special Stock for Party Travel

THERE is no reason why stock specially built or adapted for party traffic on British Railways should not be used sufficiently in the winter to justify its provision. A good deal of ordinary main-line passenger stock is idle between September and Easter, except for the Christmas holiday. With the growth in the number of outings to football matches and evening entertainment, winter user by parties of a limited number of special vehicles should be better than that of ordinary stock by the general public. Open vehicles clearly are preferred by most parties. The general public, we believe, on the whole prefers side-corridor compartment coaches, but a reasonable proportion of open vehicles in most train sets affords elasticity, including ability to handle party traffic without remarshalling. Elsewhere in this issue an observation coach with private cocktail bar is illustrated. It is available for hire in the London Midland Region. It is not new,

but is the observation car of the former "Devon Belle" transferred from the Southern Region. The extent to which it is patronised this winter will show whether there is a demand for such specially-equipped stock.

Electrification Progress in the L.M. Region

ELECTRIFICATION of the line between Crewe and Manchester, London Midland Region, British Railways, at 25 kV., 50 cycles has made such good progress that now, only 2½ years after the British Transport Commission published its decision to adopt the high voltage a.c. system for future electrification in Britain, except for extensions to the Southern Region third-rail d.c. network, the trial section between Wilmslow and Slade Lane Junction is ready for energising. Colour-light signalling was introduced on this section on July 16, and is working satisfactorily. Tests have also shown that the signalling system will continue to operate satisfactorily when the line is energised. Apart from this nine-mile section mast erection and overhead line installation is making good progress, but in many cases further work cannot be undertaken until several bridges have been raised. Of the 88 bridges to be altered or partly reconstructed, almost half are complete, and work is in progress on many others. Despite the complex civil engineering jobs still to be undertaken, electric services are to be in operation between Crewe and Manchester before the end of 1960.

German Federal Railway Shipping Services

THE fleets of sea-going and lake steamers operated exclusively or jointly by the German Federal Railway in four different regions are a profitable ancillary. In conjunction with the Danish State Railways, the Bundesbahn maintains the Baltic train ferry service between Grossenbrode, in Holstein, and Gedser, in Denmark, part of a principal route between Scandinavia and Central and Western Europe. Important international connections, including a wagon ferry, are provided by several services on the Lake of Constance. These are run by the German, Austrian, and Swiss Federal Railways and by a Swiss lake steamer company. Most of the German Federal Railway steamers ply on this lake. In the North Sea, the Bundesbahn operates steamers to and from the island of Wangerooge, a resort much patronised in summer. Another Baltic service, but for internal traffic only, is that between Grossenbrode and the island of Fehmarn. On two Bavarian lakes, the Starnberger See and the Ammersee, the railway maintains services without owning the vessels. The fleets consist of 42 units supplemented by 15 "service boats" used for purposes such as repairing bridges.

Re-distributing Steam Motive Power

MAIN-LINE diesel locomotives are being placed in service on British Railways in increasing numbers, and electric traction will begin soon over a considerable additional mileage. It has been suggested that the steam motive power this released be re-distributed between Regions, to afford the best use of express locomotives. In some quarters on British Railways it seems to be felt that the Eastern Region should turn over its standard "Britannia" Pacifics to the London Midland, to relieve the shortage of power for the accelerated services in the Midland Division of that Region. It would be a pity if the progressive improvement in East Anglian train services during the past few years were to be hampered by substitution of motive power inferior to that now in use; the considerable acceleration of the Liverpool Street-Clacton and Walton service this winter, for example, has been based on availability of "Britannia" engines from the London-Norwich trains made possible by the advent of the 2,000-h.p. English Electric diesels. It has also been suggested that the Southern Region, with 30 "Merchant Navy" and 110 "West Country" Pacifics, has steam express passenger locomotives to spare. If the rebuilding of these engines in their modernised form could be expedited, they would prove very useful for fast passenger working in other parts of Britain.

Expansion and Improvement in Brazil

MODERNIZATION and extension of the Brazilian railways, which differ in size, gauge, equipment and practice, continue apace. Dr. Renato de Azevedo Feio, President of the Rede Ferroviaria Federal S.A., the joint stock company incorporating all the railways owned or administered by the Federal Government, points out that some thousands of million cruzeiros are now being expended on the three principal railways serving the State of Minas Gerais, the highly-developed region on the centre portion of the south-eastern seaboard.

Until a comparatively few years ago public services left much to be desired in this important State, which covers an area of 224,600 square miles, with a population of 8,500,000. When Governor of Minas Gerais, Dr. Juscelino Kubitschek, who is now President of the Federation, carried out extensive plans for supply of electric power there, and as President of Brazil he is determined to improve railway communications in the State.

The three principal companies serving Minas Gerais are: the mainly metre-gauge Rede Mineira de Viacao, which connects Minas with Rio de Janeiro, Goias, and Sao Paulo and has 2,250 miles of line within the State; the Central of Brazil (5-ft. 3-in. and metre gauges) with 1,300 miles in Minas Gerais and 900 in other States; and the Leopoldina (metre gauge) with 760 and 1,100 miles respectively in Minas Gerais and neighbouring States. Six other railways enter Minas Gerais from adjoining territories and penetrate for distances ranging from 20 miles in the case of the Sao Paulo e Minas, to 400 in that of Companhia Mogiana. The former belongs to the State of Sao Paulo, the latter is a "mixed economy" enterprise, with state and private capital.

Of the three principal systems, Rede Mineira is the biggest beneficiary under the programme of reforms in Minas Gerais, and has received 1,120·3 million cruzeiros to finance improvements and purchases of motive power and rolling stock. A sum of crs. 320,944,000 is earmarked for improving 200 miles of permanent way. The National Steelworks at Volta Redonda is supplying 75 miles of rails and accessories, and 33,000 tons are due to arrive from abroad this year. The cost of rebuilding and reinforcing steel and armoured concrete bridges is estimated at crs. 42,000,000; 9,270,000 is set aside to enlarge and equip the Lavras and Divinopolis repair-shops for diesel-electric locomotives. Six marshalling yards and the telecommunications services are being modernised. At Belo Horizonte the factory and workshops installed by Metrovick do Brasil (Electricidade) are working overtime to keep pace with the orders.

Three diesel-electric locomotives of 990 h.p. and seven of 900 h.p. have recently been received from U.S.A., financed by the Eximbank loan of $100 million. Seventeen others should arrive by December next. Orders were placed locally last year for 477 steel wagons, including open and covered, hopper, and flat wagons. These are now being delivered, so that all-steel wagons and diesel-electric traction are becoming standard.

Purchase of multiple electric train sets for the suburban service between Belo Horizonte, the State capital, and Divinopolis is under consideration and the electrification programme, recently approved, is being speeded up. Four electric locomotives are running over the 40-mile section from Lidice to Barra Mansa; the electrified section between Angra dos Reis and Minduri is being modernised and electrification is being extended from Barra Mansa to Volta Redonda and from Carrancas to Lavras. The 1,500-V. equipment will be transferred to the Barra Mansa-Angra dos Reis line, while the Minduri-Barra Manso section is to be standardised at 3,000 V. The capacities of the sub-stations are being increased and transmission lines repaired between Barra Mansa and Pestana (45 miles) and from Rio Claro to Lidice. The work of electrifying the line from Minduri to Ribeirao Vermelho (70 miles) is now being started.

During the next few months Rede Ferroviaria Federal is to place orders for stainless-steel passenger coaches, air-conditioned, from Cia. Brasileira de Material Ferroviario (Cobrasma), which holds a licence to build the Budd rolling

stock. The coaches will be used on Rede Mineira luxury service from Cruzeiro to the holiday resorts of Southern Minas and the Minas Triangle.

Last July President Kubitscheck decreed the area necessary for building the railway from D. Silverio to Sao Domingos do Prato and Nova Era, in Minas Gerais, to be a "public utility". This means that it may be expropriated at the official valuation in the public interest. The project to construct this 1,200-mile line was approved in 1952. An alternative route is now being surveyed from Rio de Janeiro to the new Federal capital of Brasilia via the Central of Brazil Railway to Barra Mansa, thence by the Rede Mineira to Goiandira, and from Goiandira by the Goias Railway to Goiania, capital of Goias.

As regards the other two principal railways serving Minas Gerais, the Central is converting its metre-gauge lines from Esperanca to Sabara and from Belo Horizonte to Sete Lagoas to 5-ft. 3-in. gauge. The latter section is the start of the line to Pirapora, which is to be extended to Brasilia. Construction of a mixed-gauge line from Fremisa to Santa Luzia should be completed this year. The Central Railway is about to receive 1,700 tons of 65-lb. rails from Poland and 32,000 tons of heavy rails from France for its broad-gauge lines. One hundred and twenty all-steel wagons are now being delivered for the metre-gauge lines.

The "Centre Line" of the Central of Brazil Railway, which serves the Minas Gerais mineral zone, is being reconditioned. C.T.C. is to be standard throughout the Central Railway. It is at present being installed between Carandai, Lafaiete, and Belo Horizonte. It will permit the running of 80 trains daily between Rio and the capital of Minas Gerais. Nearly 200 miles of line between Barra do Pirai and Carandai are now controlled by C.T.C., with control rooms at Barra, Mariano Procopio, and Barbacena. The line from Paraopeba to Rio is being reconditioned to increase carrying capacity to Volta Redonda, where the National Steelworks is doubling production. A cut-off line is being built from Engenheiro Pedreira to the mineral quay at Rio to enable trains carrying iron ore for export from Minais Gerais to avoid the congested surburban section between Japeri and the Pedro II Station in Rio. The diversions completed some months ago on the "Centre Line" have allowed the running of 4,500-ton mineral train.

The Leopoldina Railway has received 18 diesel-electric locomotives, and seven others were due recently from the U.S.A. Contracts have been placed for improving the permanent way; 5,500 tons of rails are about to arrive from abroad and substantial orders have been placed with the National Steelworks for the remainder required.

European Ministers of Transport

THE ninth session of the European Conference of Ministers of Transport will be held in London at Lancaster House from October 15 to 17 inclusive. The conference was set up in 1953 under the aegis of the Organisation for European Economic Co-operation. The object was to provide a forum at which the transport problems arising out of the development of the European economy could be discussed and decisions taken by Ministers of Transport responsible in their own countries for the co-ordination and expansion of their transport systems. By this means the maximum use and the most rational development of European inland transport can be made in the interests of the expanding European economy.

The membership of the council changes each year in October. This year, Mr. Harold Watkinson, Britain's Minister of Transport & Civil Aviation, will serve as Chairman. It is customary to hold the session in October of each year in the country of the minister who is Chairman for that year. This is the first occasion on which a British Minister of Transport has held the office of Chairman. It is expected that, in addition to members from the United Kingdom, some 150 ministers and delegates will meet to exchange views on matters of common interest. The importance of this international conference is evident from the number of countries, 17 in all, that are to be represented.

The increase in European trade which is expected to develop, if and when the free trade area proposals are implemented, and the already rapidly-expanding tourist industry by sea, land, and air, cannot function smoothly without efficient transport. The agenda, which has been prepared by the Secretariat in Paris, has not been made public, but it may be assumed that one of the subjects of the discussion will be an endeavour to reduce administrative and technical difficulties. Further discussion would take place with advantage on the elimination of passports for European travel, and a reduction of delays in custom formalities. These restrictions are irksome to tourists and regular travellers.

The countries attending the conference are: Austria, Belgium, Denmark, France, the Federal Republic of Germany, Greece, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey and Yugoslavia. The conference will be preceded by a meeting of deputies on October 14. On October 15, there will be a formal opening, at which Mr. Harold Watkinson will welcome the members and their guests on behalf of the Government. Immediately after the formal opening there will be a business session.

During the visit a programme of entertainment has been arranged. Delegates will be given an opportunity to visit places of transport, industrial, scenic and historical interest. On October 15 there will be a conducted tour of London and Windsor. The next day a visit, for selected members, has been arranged to the United Kingdom Atomic Energy Research Establishment at Harwell, and other members have been invited by the Port of London Authority to see the London Docks. In the evening the Government will act as host at a dinner to be held at Lancaster House. On October 17, Cambridge will be visited at the invitation of the British Transport Commission. An opportunity will be given to tour the university. The party will travel by special train hauled by one of British Railways' new 2,000-h.p. diesel-electric locomotives.

London Midland Region Winter Service

IT has long been foreshadowed that preparations for electrification would have a considerable effect in slowing down train services over the main lines concerned, and the drastic decelerations which have come into operation over the London Midland "Western Division" (ex-L.N.W.R.) main line out of Euston justify this forecast. By comparison with the Eastern Region main line out of Kings Cross, over which up to 20 min. of recovery time in respect of speed restrictions for permanent way work have now been absorbed by degrees into the long-distance train schedules with little or no increase in overall journey times (involving proportionately harder locomotive work), on the L.M.R. the corresponding recovery margins have been added *en bloc* to the journeys. Moreover, there are some considerable differences in the amount of these additions, as between train and train, suggesting that in the case of some trains normal running times have been eased out as well.

To cause the least possible disturbance to the many connectional times at Crewe, the focal point of the Western Division, the general principle adopted is that down express trains all leave Euston 10 min. earlier, except for the 8.45 p.m. "Irish Mail," which runs in practically unaltered times to Holyhead; the 6.55 p.m. to Wolverhampton, 7 p.m. to Birmingham, and 7.15 p.m. "Royal Highlander," which all start 5 min. earlier; the 9.10 p.m. all-sleeping-car train to Glasgow, which starts at 10 p.m. and reaches Glasgow Central at 6.45 a.m. (a more convenient hour than the former 6 a.m.); and the 10.50 p.m. to Perth, which starts at 10.35 p.m. In the up direction there is more variation and more deceleration; starts from Liverpool for the most part are 10 min. earlier, but from Manchester are unaltered (as 10 min. earlier starting times have been in force for some time past to cover speed restrictions between Manchester and Crewe), and also from Birmingham. Euston arrivals, however, vary from 10 to 15 min. later than hitherto.

On the Euston-Birmingham-Wolverhampton service the

additions to overall times in the down direction are mainly 7-8 min., but in the up direction from 14 to 17 min. As regards Euston-Liverpool, the additions going down average 16 min., but most up expresses are slowed by 20 min. The up "Comet" from Manchester, on the other hand, omitting the stop made hitherto at Crewe and running non-stop from Stockport to Watford, with a Euston arrival at 9.30 p.m. is only 10 min. slower than before. But the up "Mancunian," non-stop from London Road (9.35 a.m.) to Euston, is slowed by 15 min. to 3¼ hr., and so, like the "Red Rose," takes 25 min. longer to London than when on its best post-war timing of 3 hr. 20 min. Deceleration of the Euston-Manchester trains via Stoke in general is by 8-10 min. only.

Apart from the Anglo-Scottish changes already mentioned, the down "Royal Scot" is 5 min. later into Glasgow, and the "Midday Scot" (now 1.20 p.m. from Euston), 14 min. later (9.24 p.m.), in the latter case a deceleration of 24 min. The up "Royal Scot" and "Midday Scot" both reach London 15 min. later, at 5.30 and 9.15 p.m. respectively, but the 12.20 p.m. from Perth, due at 9.52 p.m., is 6 min. slower only. London arrivals of the night trains from Scotland, already very amply provided with recovery time, are practically unchanged. One alteration of an up Anglo-Scottish service, already mentioned in our review of the Scottish Region timetables in the September 12 issue, is that the former 5.40 p.m. from Glasgow to Euston, a semi-fast service, now leaves at 6.50 p.m., and Carlisle at 9.21 instead of 8.35 p.m., but reaches Euston only 14 min. later, at 5.19 a.m. The speed-up south of Carlisle is largely effected by cutting the former 28 min. wait at Lancaster to 5 min. This train now picks up passengers at Lancaster, Preston and Warrington; previously these stops were to set down only.

The down morning "Caledonian" (formerly 7.45 a.m. from Euston) and the up evening "Caledonian" (4 p.m. from Glasgow) are both withdrawn after a life of no more than three months, due to lack of patronage. It seems a pity that a Preston stop was not tried instead of those at Crewe going down and Stafford coming up, as this would almost certainly have provided plenty of custom between Preston and Glasgow by a much-needed improvement of the facilities between Manchester and Liverpool and the Scottish city, and quite probably would have attracted patronage between London, Preston and various surrounding Lancashire towns also, which have no good early morning service from London.

It also might have been thought possible, in the Western Division alterations, to leave on their previously existing schedules some of the express trains which run on "Limited Load" timings, but normally carry no heavier loads than many of the "Special Limit" trains and have the same motive power; this applies to such services as the former 2.30 p.m. from Euston to Liverpool and the 2.45 p.m. to Manchester (now 2.20 and 2.35 p.m.), but they are slowed by 16 and 10 min. respectively, like the remainder. If the eased-out times in general permit a reduction of the frequent double-heading of trains on the Western Division, they will certainly lead to some operational economy; but the net result is to leave no mile-a-minute timings on the Western Division, with the sole exception of a diesel multiple-unit run over the 26½ miles from Chester to Prestatyn in 26 min.

Fortunately the present fast service over the "Midland Division," in large measure at pre-war speed, is left practically untouched. A supplementary notice in the timetable book indicates a considerable number of withdrawals of local trains in all Divisions, principally on branches, as part of the economy drive; some branches in particular are left without any Sunday trains and the Foxfield-Coniston service is withdrawn altogether. But it is also remarkable that there is practically no curtailment of the highly attractive diesel multiple-unit services. The new and much amplified services with rail-buses between Bedford and both Hitchin and Northampton appear for the first time in the book.

In connection with the alterations at Manchester London Road in connection with electrification, the timetable shows the Altrincham electric service as terminating at Oxford Road and the Liverpool-Warrington-Lymm-Manchester steam service as terminating at Warwick Road. The special notice, however, indicates that the latter is still to be worked as far as Oxford Road also, though not to London Road.

Western Australian Government Railways

MR. A. G. HALL, who, as announced in our issue of April 4, has resigned on grounds of ill-health from the position of Commissioner of Railways in Western Australia, sent us a copy of his last annual report upon them, for the year ended June 30, 1957. It records yet more goods traffic records, the volume of tonnage of goods and livestock moved reaching 4,223,031—430,175 or nearly 10 per cent higher than the 1955-56 figure—and a ton-mileage of 667,695,009, 59,276,804 more than in the previous year. Though country passenger traffic remained about the same, suburban journeys rose by 9 per cent. Nevertheless, though total earnings increased by £769,945 expenditure rose by £1,476,971, due mainly to increases in wages and new awards costing £394,000 and depreciation and interest totalling £459,000 approximately. Consequently the deficit on working rose by over £664,000 to £5,279,937.

The report points out that the last permitted increases in fares and freight rates were in 1952 and 1953 and, had costs remained unchanged since then, the deficit would have been only about £3,500,000. It is significant that the proportion of railway expenditure (excluding interest) not covered by earnings was 19 per cent, exactly the same figure as the average not only from 1954-57 but also between 1948-52, a remarkable uniformity. The persistent rise in operating and other expenditure, because it was unbalanced by correspondingly enhanced freight charges, had completely obscured the marked efficiency in operation. Fuller details of the operating picture are given in the table below.

	1955–56	1956–57
Route-miles open	4,119	4,117
Train-miles run	8,278,200	8,277,986
Rail passenger journeys	12,270,777	13,270,900
Tonnage carried—		
Paying goods	3,655,327	4,075,037
Livestock	137,529	147,994
Total (including departmental)	4,523,421	4,888,942
Earnings—	£	£
Coaching and mails	1,686,418	1,692,457
Goods and livestock	10,988,696	11,697,627
Total revenue	13,274,166	14,044,111
Operating expenses	14,993,054	16,011,316
Depreciation	1,130,704	1,257,391
Interest	1,723,314	2,055,341
Deficit (in round figures)	4,616,000	5,280,000

Heavy cost of rehabilitation, still far from complete, resulting from inadequate replacement of assets over many years, and causing near breakdown in 1947, had to be considered and was responsible for the abnormal loan, depreciation and interest charges having to be met. The acute shortage of staff had in part been made good, but the increase was far from proportionate to the increase of 57 per cent in ton-mileage between 1950 and 1957.

Two "X" and two "XA" diesel-electric locomotives were received from British manufacturers during the year to complete all outstanding orders. As nearly 40 per cent of the locomotive stock was over age, further replacement was envisaged as essential. The position regarding coaching stock was most unsatisfactory, more than 80 per cent of the coaches being over 40 years old; more funds were being allocated to replacements. The wagon position was similar but not so acute. The permanent way generally, though well below accepted standards, was being maintained within safety margins with the aid of load and speed restrictions where necessary.

What is perhaps the most outstanding feature of this report, however, is the announcement of the Parliament's decision to cease operations on no fewer than 842 route-miles of branch lines or over 20 per cent of the whole system. Altogether 17 sections of line are involved, with one exception varying in length from about 20 to over 110 miles and distributed throughout the State. They were due to be closed on various dates between January,

1956, and September, 1957, though in two instances the dates had not been fixed. This is certainly closing down unremunerative branch lines with a vengeance, and is probably as drastic a single decision as anywhere in the world. The report adds a warning that the consequent relief to railway finances would necessarily be gradual, as the staff made redundant had, by Government order, to be absorbed in normal wastage, this delaying savings in general operation.

Scanty Freight Movement by Rail

(By a correspondent)

THE eighth four-week period from mid-July to August 10 is always a slack time for wagon loading, but this year No. 8 of *Transport Statistics* reports unusually large decreases in freight train traffic originating. The tonnage of merchandise and livestock fell by 315,000 tons, or nearly 12 per cent, to 2,316,000. The setback to the output of pig-iron and steel partly accounted for a decrease in mineral forwardings of 1,188,000 tons, or 26·6 per cent, and also for the decline of coal and coke declarations by 1,473,000 tons, or 15·6 per cent. The total traffic put on rail shrank by 2,975,000 tons, or 18 per cent, to 13,559,000 tons. In handling this meagre tonnage our railways worked 1,061 million ton-miles, 209 million fewer than last year—a decrease of 16 per cent in the volume of freight movement.

The above comparisons are made with 1957, which was by no means a good traffic year. The serious nature of the prevalent drop in railway productivity is clear from a contrast of this year's results with those for the same period of 1951, when 18,127,000 tons were originated and 1,481 million ton-miles were worked. The total tonnage then consisted of 3,519,000 tons of merchandise, 4,192,000 tons of minerals and 10,416,000 tons of coal and coke. This year's carryings were lower by 1,203,000 tons of merchandise (34 per cent), 905,000 tons of minerals (21 per cent) and 2,460,000 tons of coal (23 per cent)—a total loss of 4,568,000 tons (25 per cent). In consequence the production of ton-miles was reduced by 420 million, or 28 per cent.

Obviously this painful experience of lessened output was repeated in the next four-week period to September 7, as receipts from merchandise were down 17·7 per cent, from minerals by 26·6 per cent and from coal by 15·1 per cent. For the first time this year, revenue from parcels, mails and freight by passenger train was also lower. For five periods of the year that revenue furnished the only plus sign in the statement of British Railways freight receipts; it is to be hoped that the downward trend will be checked speedily.

The two factors which would augment railway revenues, both in this country and in the United States, are an increase in coal production and a revival of activity at steel plants. For 37 weeks to September 13 the National Coal Board reported a fall of 6,952,720 tons, or 4·3 per cent, in the output of saleable coal. The decrease was small against a drop of 70 million tons, or 23 per cent, in American production in the first 32 weeks of this year, but affected our railways directly and indirectly. Industry consumed less coal and raw materials, while turning out a smaller quantity of goods for transport. Here the shortage of manufactured goods will not be offset by large forwardings of agricultural produce. The American railways handled bountiful crops of wheat by the middle of August and may set up a new record for loading grain before the year is out.

LETTERS TO THE EDITOR

(The Editor is not responsible for opinions of Correspondents)

Motive Power Policy

September 8

SIR,—This correspondence originated with a letter of mine concerning the Iraq crisis; it has developed somewhat since then. I am now encouraged to ask someone to set out in simple language just what is the case of diesel traction in this country, bearing in mind the following facts as I understand them:—

1. The capital cost of a diesel locomotive is approximately three times the corresponding steam locomotive.
2. At the present time, fuel and lubricating oil costs for the two types of traction per mile are approximately the same.
3. Maintenance costs may be in favour of the diesel.
4. Operating costs are in favour of the diesel where one man operation can be employed.
5. Track maintenance costs are in favour of the steam locomotive.
6. Part-load characteristics of diesel locomotives are poor.
7. Average expectation of life of the unit is probably in favour of steam.
8. Availability is the diesel's strong point, but is only of value if the necessary traffic is available which on passenger work it broadly is not. It is for this reason that the Southern Region's multi-unit electric trains run a surprisingly low average mileage per day.
9. Home-produced fuel is used by steam locomotives.
10. Statistics of numbers of locomotives under repair are nowhere as favourable to the diesels as one would expect, as the latter are relatively new machines.

Nothing I have said above, however, is intended to mean that there is no case for diesel shunters in the larger yards or for diesel railcars or for the electrification of the busier lines.

May I end up with another point touched upon in the note in your September 5 issue, "Coupling Problems," and that is, so far as I can see, that unless British Railways solve this problem soon it can be a serious difficulty in the face of diesel or electric traction of goods trains. It could mean that a 6F diesel is required to replace a 4F steam, not because it won't start the train, but because it won't stop it!

Yours faithfully,

J. B. LATHAM

"Channings," Kettlewell Hill, Woking, Surrey

Smoking in Trains

September 12

SIR,—Although in general agreeing with your Liverpool correspondent, whose letter is published in your September 12 issue, on the question of proper protection for non-smokers, I must point out that in the Western Region the staff do frequently check smoking in non-smoking compartment, and unasked. I wish that there could be less smoking mixed up with eating in refreshment cars.

Your readers may also like to hear how carefully the officials guard the "ladies only" compartments in our night train from Cornwall to Lancashire, often at first crowded with local evening passengers. I try to help by using these compartments and sometimes invite in, say, a very exhausted serviceman—only to have the next railway official who passes insist kindly, but firmly, on his leaving before the next stop.

If we must have smoking compartments, let us have litter receptacles that will hold more than mere ash and stumps. In fact let us have litter receptacles throughout the train. The carpet of litter we find in Cornwall in the train from Lancashire—and to be fair, in some other trains—is quite unnecessary.

Yours faithfully,

PHOEBE LEAN

Saltash, Cornwall

THE SCRAP HEAP

Good Service in 1908

The District Railway, which now runs 30 trains an hour through the stations between South Kensington and Mansion House, is increasing the number to 34. The District is already running a number of non-stop trains to quicken the exodus from the City to Hammersmith, Hounslow and Ealing. —*From "The Evening News" September,* 1908.

[London Transport states that during the rush hour there is now a train every 90 sec. on the District Line.]

Wayside Station Welcome

The porter at a small country station often knows all about us and our destiny. He may not attend to us instantly for he plays many parts——ticket collector, opener of level-crossing gates, and heaven knows what besides; but his welcome is worth waiting for and is as much part of the pleasure of reaching some holiday home as is the sight of a familiar landmark out of the carriage window. Sometimes in the course of years he becomes the station master; yet he is in no way puffed up, and his lovely gold-laced cap does not make him forget old friends or old times.—*From "The Times."*

Driver on Busman's Holiday

A top-link driver of the Northern Region of the French National Railways, Monsieur André Duteil, who was spending a few days of his holidays in a first visit to Britain, recently travelled to Bristol on the footplate of a "King" class locomotive No. 6000, *King George V*, hauling the "Bristolian" (8.45 a.m. from Paddington, due Bristol Temple Meads at 10.30). His normal work in France is on a four-cylinder compound 4-6-4 engine, No. 232.S.002, from La Chapelle Depot, Paris; his turns of duty take him to Lille and to Jeumont on the Belgian frontier.

Monsieur Duteil, who speaks no English, was accompanied on the footplate by a representative of the Running & Maintenance Officer of the Region. He returned to London by the 4.30 p.m. from Bristol, the up "Bristolian," due Paddington 6.15 the same day, on the footplate of "Castle" class No. 5057, *Earl Waldegrave.*

Driver André Duteil with Driver J. Ward and Fireman F. Harris, of Old Oak Common Depot

The Saundersfoot Railway

Apart from the tunnels, the roadbed, some sections of which are now indiscernible, and the overgrown ruins of buildings at the curiously named village of Stepaside, few remains exist today of the 4-ft 0¾-in. gauge Saundersfoot Railway in Pembrokeshire. Incorporated in June, 1829, it was worked by horses until 1874, when the first steam locomotive appeared, was closed in 1930, partly reopened five years later and finally closed in 1939.

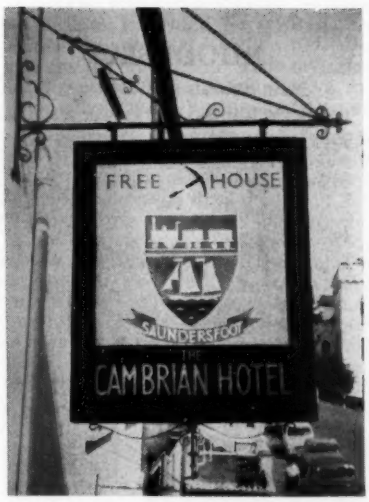
At Saundersfoot Harbour, where the line served wagon coal tips, the northern side of the quay is now used as a car park. The nearby Cambrian Hotel displays the sign depicted in the accompanying illustration. The shield is divided into two parts. One contains a gold 2-2-0 tender locomotive and wagon on a red background, and the other a gold sailing ship riding on a green sea against a blue sky. The engine is supposed to represent the Saundersfoot Railway's *Columbine* which was, in fact, a Manning Wardle 0-4-0 saddle tank.

It's an Ill Wind . . .

The new arrivals in the United Kingdom during the year ending March 31, 1898, must be very thirsty people, since, though they numbered only 361,000, no less than 1,499,107 more barrels of beer were necessary for home consumption in the year than in the previous one. Perhaps, too, it was the beery presence of these people that drove others to the first and second class carriages on the railways, for we find that during the same period the duty on railway fares of over one penny per mile increased in England and Scotland by £16,000.—*From "The Financial Times" of September* 19, 1898.

Alexander Nasmyth

The 150th anniversary of the birth of James Hall Nasmyth, which has been marked by an exhibition at Eccles, was the subject of editorial comment in our August 29 issue. James Nasmyth, famous as the inventor of the steam hammer, and founder of the Bridgewater Foundry, was the younger son of a hardly less remarkable father, Alexander Nasmyth, the bi-centenary of whose birth occurred on September 9. Alexander has been described as a minor Leonardo da Vinci of the Industrial Revolution. Besides being an accomplished portrait and landscape painter he was a skilled engineering draughtsman and inventor. He was stated by his son to have been the first to devise a system of riveting by compression; and he is believed to have originated the spanning of wide spaces by the bow-and-string principle for bridges and roofs; the latter are exemplified in the many overall roofs of stations which began to be built early in the history of railways.



Photo] [Andrew Dow

Saundersfoot Railway locomotive depicted on inn sign at Saundersfoot, Pembrokeshire

What to Spot Now?

Come, lasses and lads, give ear to your dads,
Who are neither old buffers nor duffers,
And, even today, in their old-fashioned way,
Can tell you a lot about puffers.
Each engine that passed was typed, taped and classed,
Be it Baltic, Atlantic, Pacific,
And, when something new steamed into view,
The spotters' delight was terrific.

When the big, main-line stuff sometimes ran out of puff
And had to be helped up the bank,
The source of the power in necessity's hour,
Was often a saddle-back tank.
In all shapes and sizes, with streamlined surprises,
Their story goes by like a dream;
One day all the rage—the next off the stage;
The curtain comes down on Old Steam.

A. B.

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

RHODESIA

New Station at Bulawayo

Rhodesia Railways' plans for a station mainly for African passengers at Mpopoma, Bulawayo, have now been approved. The cost is estimated at £48,700 which includes the station buildings and platform, a tarred approach road, permanent way, and signalling.

Mpopoma Station building will be a brick structure 250 ft. long situated near the Khami road. There will be two booking halls, one for first and second class passengers, which will have an adjoining parcels and luggage office, and the other for third and fourth class passengers. Third and fourth class waiting rooms are to be built, the latter having a special refreshment kiosk. A separate kiosk will be available for other classes of passengers. The inside finish to the walls of the waiting rooms will be cement glazed for easy cleaning and there will be large pre-cast concrete block ventilation grilles.

Initially one platform will be used for up and down trains but the design allows for a second platform with passenger shelters and a connecting footbridge when this is required.

SOUTH AUSTRALIA

Standard Gauge Proposals

A request by the South Australian Government to the Commonwealth Government for £50,000 to make a preliminary survey of northern lines with a view to standardisation has been turned down.

Lines for which standardisation has been proposed are from Port Pirie to Cockburn on the South Australian-New South Wales border, Terowie to Quorn, and Gladstone to Wilmington, a total distance of nearly 370 miles.

The Commonwealth Government view is that it already has commitments for standardising the Melbourne-Albury line, Victorian Railways, which is in progress, and South Australian proposals need further examination.

VICTORIA

Introduction of C.T.C.

C.T.C. has been put into operation on the Glen Waverley line. All train movements at and beyond East Malvern will be controlled from a panel at East Malvern.

The first large-scale application of C.T.C. in Australia will be on the uniform-gauge line between Melbourne and Mangalore.

Further Air-Conditioned Vehicles

Another second class air-conditioned saloon-type sitting car has been built at Newport Workshops, bringing the number of these vehicles up to 12. Of these, eight are first class and four second class. The air-conditioning equipment is Stone-Carrier. Saloon-type cars are included in the "Spirit of Progress" between Melbourne and the New South Wales border at Albury, and in other expresses.

Announcing completion of the latest coach, the Minister of Transport, Sir Arthur Warner, said that the current programme provides for 13 first and 13 second class coaches. They are being produced at the planned rate of six a year, and, ultimately, most important country passenger trains will include some.

QUEENSLAND

Branch Line Closure

The State Government has closed down the 30-mile branch railway line from Dimbulah to Mt. Mulligan, in North Queensland. After the closure of the State coal mine at Mt. Mulligan earlier this year there was no traffic to justify operating the line as mine workers had been transferred to Collinsville and the township had virtually disappeared. Railway buildings are being dismantled and usable materials sold or removed for use elsewhere. Discussions are to take place as to whether the track could be used as the foundation for a roadway.

UNITED STATES

N.Y.C. Service to St. Louis

For some time past the New York Central System has been seeking authority from the Interstate Commerce Commision for the abandonment of its passenger service over the last 252½ miles of its "Big Four" route from New York and Cleveland to St. Louis, that is, from Indianapolis westwards. Hitherto there have been four express trains in each direction daily, at 8.35 a.m., 12.50, 6.5 and 11.5 p.m. from St. Louis, three of them in 4 hr. 20 min, and four in the opposite direction, most of them with through portions to and from New York. The N.Y.C. claims that the operation of these has been entailing an annual loss of $1,290,000 owing to a reduction of 75 per cent in patronage during the last eleven years.

The I.C.C. has now authorised the discontinuance of the westbound N.Y.C. "Southwestern" and "Misourian" between Indianapolis and St. Louis and the eastbound "Knickerbocker" and "Missourian," leaving one day and one night train in each direction over the route; this discontinuance will be for a trial period of 180 days, when the position will be reviewed again. An ample and faster service is provided by the Pennsylvania Railroad over its 240-mile route between Indianapolis, Terre Haute and St. Louis.

ARGENTINA

Strikes

A series of partial stoppages, the most serious of which was a 24-hr. strike on August 17, took place during that month, staged by the railwaymen's and enginemen's unions. The reasons given were the delay in implementing the general 60 per cent emergency increase; the granting of pensions amounting to 82 per cent of the last salary received, and widows' pensions of 70 per cent; and the non-settlement of claims for the revision of certain wage scales. The stoppages ranged from one hr. to 4 hr. a shift (with the exception of the 24-hr. stoppage) and disrupted all train services.

An interview with President Frondizi resulted in a promise that the men's wishes as regards pensions would be met. As for the other points, only partial solutions were arrived at, and as a result, new strikes are in the offering.

BRAZIL

Rails from Canada

The Canadian Government has approved the sale to Brazil by the Associated Metals & Minerals Corporation of steel rails and accessories made by Algoma Steel Corporation of Sault Ste. Marie. The Export Credits Insurance Company will cover 90 per cent of the contract price of $4,500,000, which is payable by instalments, with interest at 4½ per cent a year.

Allocation of Motive Power

Motive power and rolling stock, both new and already in service, are being allocated to, or re-distributed among, the several railways by the Rede Ferroviaria Federal S.A. (R.F.F.S.A.) in accordance with the needs of each. The 41 transfers, effected to date, include six 4-6-2 and four 2-8-0 steam and five diesel-electric locomotives to the Leste Brasileiro.

By the end of August R.F.F.S.A. had received from the U.S.A. 70 1,300-h.p. diesel-electric locomotives of the 195 purchased on account of the Eximbank $100 million loan. Those distributed so far have been all to the Parana-Sta Catarina Railway, Noroeste do Brasil, Rede Mineira de Viacao, and R. F. do Nordeste (former Great Western of Brazil).

The first 11 diesel-electric locomotives in service on the Noroeste have raised carrying capacity from 2,500 to 9,000 tons daily over the Aracatuba-Bauru section. Under the agreement signed between the two countries Bolivia will supply Brazil with petroleum products, to be transported by the Brazil-Bolivia Railway to Corumba and thence over the Noroeste Railway to Sao Paulo. Plans have been approved to re-equip the

Noroeste Railway at a cost of 2,654 million cruzeiros.

The Santos-Jundiai Railway repair-shops are re-conditioning 390 freight wagons for distribution among eight incorporated railroads. The greater number are destined to R. F. Nordeste (80), Rede Mineira (70), and Leopoldina (60).

AUSTRIA

Electrification Progress

The Federal Railway is stated to be unable to inaugurate electric traction on a further section, this year, of the main line from Vienna to Styria and Carinthia via the Semmering, because of difficulty in arranging for the change from electric to steam haulage at any of the stations on the mountain section of the Semmering line. It is hoped to start full electric working from Gloggnitz over the Semmering to Mürzzuschlag, early next year.

Some progress is reported on electrification of the Amstetten-Selzthal-Bischofshofen line, which relieves the main line via Salzburg.

SWITZERLAND

Extension of Teleprinter Network

The Federal Railways teleprinter network, first introduced in 1940, is to be considerably extended under a three-year programme. The Morse inkwriter telegraph has been the principal means of intercommunications between management, offices, stations, and yards, this system is to be replaced for economy reasons. Some business previously handled by Morse telegraph will be transferred to telephones while some now handled by the latter will in future be taken over by teleprinters.

The work is to be carried out in two main stages; the first will be started this year and completed in three years at a capital outlay of some 3,000,000 fr. from which an annual saving of about 250,000 fr. is anticipated. Initially five automatic stations are to be installed, at Lucerne, Lausanne, Berne, Basle and Zurich, connecting with 100 out stations in the main and divisional managements, large stations, goods and marshalling yards, junctions and so on.

Transmitting by teleprinter on the Swiss Federal Railways, showing dial for automatic exchange facilities

Publications Received

La Modernización de la Vía (Modernisation of the Permanent Way). By Roger Sonneville; parallel texts in French and Spanish, with introduction by F. Costello, Consultant to the Argentine Ministry of Transport. Uzès (Gard), France: Ateliers Henri Peladan. 9¼ in. × 6¼ in. 38 pp. Illustrated. No price stated.—This is a reprint of a lecture given at the Ninth Pan-American Railway Congress at Buenos Aires. Fomerly in the service of the S.N.C.F., where he for some time concentrated on research connected with permanent way problems, the lecturer is now consulting engineer to the Société d'Etudes Ferroviares, which is engaged in bringing French ideas and products to the notice of railway managements in other countries. The question of concrete versus timber for sleepers is discussed fully, with reference to the attempts being made by many railways to introduce long sections of welded track and other improvements intended to make for quieter, steadier and more comfortable running. The re-inforced concrete sleeper, devised by the lecturer, and known in consequence as the R.S. type, with the accompanying fixings and so on, receives particular attention; but all aspects of the question are reviewed, with reference to local conditions, material and economic, so as to present a balanced picture of the factors determining the choice of equipment to meet varying circumstances.

Cylinder Borers.—Horizontal and vertical diesel engine cylinder boring, and connecting-rod big-end boring, machines of Alfing types are illustrated, and very fully described in English, in a 28-page booklet, No. 463E, from Hahn & Kolb. These particular fine-boring machines are developed from the old Vomag traditions at the Wasseralfingen works in Western Germany.

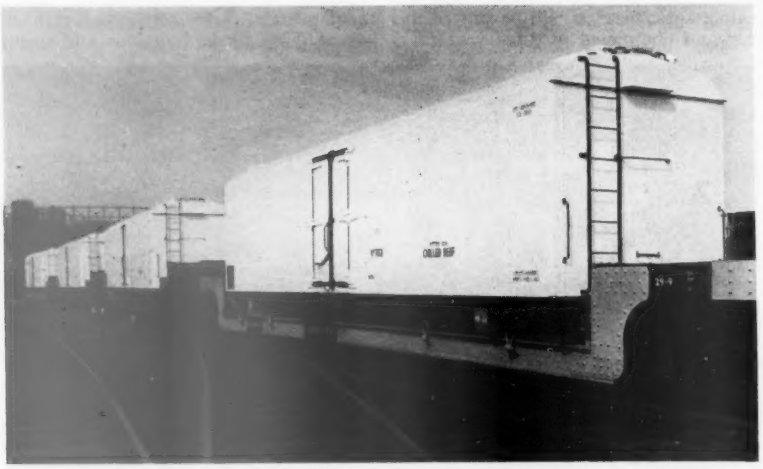
SRO Bearings.—For many years now the Kugellagerwerke J. Schmid-Roost A. G., and its fore-runner Schmid & Co., has been making a wide variety of ball and roller bearings, including the production of roller bearings for rolling-stock axleboxes, traction motor armature and axle bearings, and other railway purposes. The recently-issued 182-page catalogue No. 80, with stiff cover, spiral binding, and comprehensive thumb index lists and dimensions every type and size of bearing made at the company's Zürich-Oerlikon works in Switzerland; and contains also a treatise on the design and practice of ball and roller bearings. This book is in the German language; but an English edition is in preparation.

Leanmix.—The properties of lean rolled concrete base with granite and whinstone aggregates (Leanmix) are given in a short publication issued by the British Granite & Whinstone Federation, 55-58, Pall Mall, St. James', London, S.W.1. This material is a concrete having a high aggregate/cement ratio, which is stated to have many advantages over traditional foundation materials. Copies of the publication may be obtained from the Federation on request.

Silesium Rectifiers.—A very complete examination of the theory and practice of silesium rectifiers for small and large powers is made, in the German language, in a 22-page publication entitled *Silizium-Gleichrichter*, issued by Siemens-Schuckertwerke A. G., Erlangen, Germany, and which makes mention of the rebuilt single-phase class E.80 electric locomotive of the German Federal Railway which now has an 800-kW rectifier of this type. Comparisons also are made to show the great saving in space and weight compared with silesium rectifiers for traction purposes.

Refrigerator Vans for New Zealand Government Railways

Bodies and underframes for 100 vehicles built by Metropolitan-Cammell at Saltley



Four of the refrigerator vans leaving Saltley Works for New Zealand

DELIVERY is in progress of 100 refrigerator wagon bodies and underframes for the New Zealand Government Railways. They are being built by Metropolitan-Cammell Carriage & Wagon Co. Ltd. at its Saltley Works. The vehicles are designed for carrying chilled beef and frozen mutton or lamb. They are being despatched in a completely assembled condition except for buffers, steps, and so on, which are removed for shipment and stored inside. The development of these refrigerator bodies, and the various modifications, have been carried out in collaboration with the N.Z.G.R. To date, 50 vans have been delivered.

Leading dimensions of the vans are as follow:—

Length over headstocks	37 ft. 6 in.
Length over body panels	37 ft. 1⅛ in.
Length inside body	32 ft. 2⅛ in.
Width inside body	7 ft. 3⅛ in.
Height from rail, over catwalk ..	11 ft. 6 in.
Maximum width, over door ironwork	8 ft. 5⅛ in.
Weight of body and underframe ..	12 tons 17¾ cwt.
Weight of bogies	5 tons 10 cwt.
Distributed load	25 tons

Body Construction

The body design, which is stated to be new in all respects, incorporates an all-steel structure with welded and riveted assemblies. Attention has been given to all the structural and exterior panel joints and the interior lining, to ensure that the interior of the vehicle is effectively sealed when the doors are closed. The clean flush interior is seen in the accompanying illustration, this being a particular feature so as to avoid the development of bacteria germs.

The underframe is of welded construction with mild steel angle solebars 6 in. × 4 in. × ½ in., strengthened at the centre and ends by the addition of 3 in. × 3 in. × ½ in. mild steel angle. Longitudes and headstocks are of 9 in. × 3½ in. × 22·27 lb., B.S. channel section 112; the bolsters are fabricated from ½-in. plate; the underframe is sheeted with 16 g. mild steel sheets which are flanged for strength, and the whole is welded to the frame. These form a base for the floor timber framing and for insulation.

Janney Yoke type buffers with i.r. springs are supplied with the N.Z.G.R. standard single central buffer. Safety chains with steel springs are fitted and there is one drawhook per wagon.

Bodysides

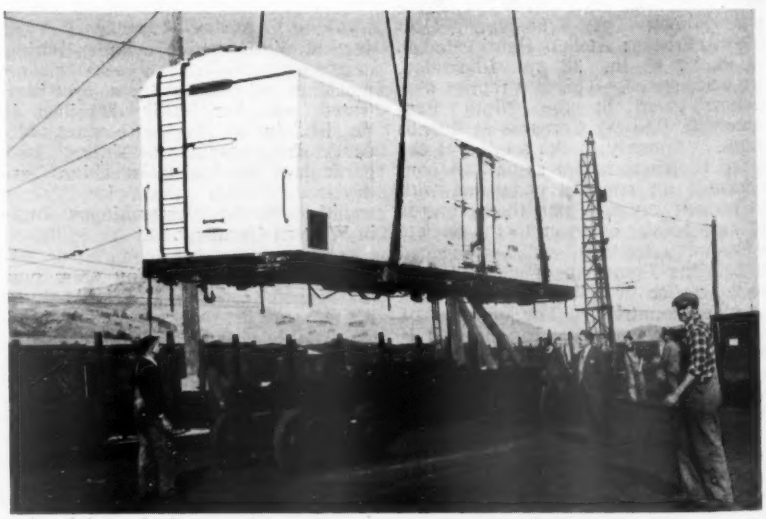
The body side structure is made up of 10 b.g. mild steel pressed pillars with ⅛-in. thick pressed crib rail, both of Z-section. The cantrail is 2 in. × 2 in. × ¼ in. angle and longitudinal rails are of channel section 10 b.g. The exterior panels 16 b.g. are riveted to the framing and the whole side is constructed in one piece in the jig and offered up to the underframe. The construction of the ends is similar.

The hinged side double doors are of welded angle frame construction, the main members being 2 in. × 2 in. × ⅛ in. angle stiffened with a horizontal channel pressing of 10 b.g. mild steel. The exterior 16 b.g. flanged door panel is secured to the framing by intermittent welding. A feature of the door design is the rubber cushioning covered with rexine arranged at the door edges. The robust door locking mechanism exerts sufficient pressure to compress this cushioning on the sloping faces of the timber doorway surround, and thus forms the seal required.

In the roof the carlines and purlins are Z-section 16 b.g. mild steel, and the cantrail of ⅛-in. mild steel plate Z-section is suitably stiffened at the doorways. Roof sheets of 16 b.g. mild steel have butt welded joints and are attached to the framing by intermittent welding. The roof is riveted up to the bodyside and ends as a one-piece unit, with a catwalk along the length of the vehicle.

Insulation

Onozote insulation is applied throughout adjacent to the exterior panels or roof sheets. It is sealed at the body side and ends with a stainless steel lining panel on plywood and secured on the timber framing. At the floor it is sealed with 14 b.g. galvanised sheets which are covered by hinged timber grating. Ceiling panels are $\frac{5}{16}$-in. thick resin-bonded, with waterproof plywood coved at the sides. The timber framing on the doors



First refrigerator wagon body being lowered on to bogies supplied by the New Zealand Government Railways, at Lyttleton

Hinged timber gratings locked against bodysides, showing flush galvanised sheet flooring

is faced with $\frac{5}{16}$-in. thick plywood protected by extruded aluminium corrugated sheet. Fibreglass, 2 lb. per cu. ft. density of resin-bonded quality, is applied at cantrail, body and vertical corners and floor, and is used particularly to fill up the cavities created by the sub-assemblies.

Two brine tanks are located at each end of the van behind the bunker panel. These are in stainless steel and are of welded construction with a drain cock. The hinged panels above and below the bunker panel are faced with stainless steel, the lower panel allowing access to the brine tank drain cocks. Originally, perforated hinged panels were used, but because of damage caused by the impact from frozen mutton and lamb carcasses sliding violently against them, solid doors will now be supplied with stainless steel sheets. This prevents the possibility of bacteria harbouring in the interstices formed by the perforated panels.

As frozen carcasses are packed as high as possible into the wagon, that portion of the brine tank exposed above the bulkhead is left unprotected and is liable to be pierced if struck heavily with sharp leg bones. To avoid this, a further door, similar to the lower door, is to be fitted to close the opening at the top of the bulkhead. When chilled beef is carried, carcasses are hung from the roof; on these occasions the top door will be dropped and the lower one raised. A hatch is arranged at each tank for loading the brine, access being by ladder at the end of the van. Thermometer wells are situated in the roof and ceiling to allow for a temperature check of the inside of the van. Galvanised steel gutters running the full length of the floor at the bodyside take care of any condensation inside the van.

The body and underframe is painted and finished, the underframe being black and the body exterior white enamel. Interior woodwork, including ceilings, is primed with epoxy base paint and finished a bone-white colour.

Principal sub-contractors for the refrigerator vans include:—

Air brake equipment ..	Westinghouse Brake (Australasia) Pty. Ltd.
Helical steel springs ..	English Steel Spring Corporation Limited
L.r. springs, drawgear ..	G. Spencer Moulton & Co. Ltd.
Steel castings, drawgear	Robert Hyde & Son Ltd.
Floor and roof sheets and body panels	Richard Thomas & Baldwin Limited
Door panel sheets ..	The Steel Company of Wales Limited.
Galvatite floor covering	John Summers & Sons Ltd.
Staybrite stainless steels	Firth Vickers Stainless Steels Limited
Resin-bonded hardwood-faced plywood	Flexo Plywood Industries Limited
Kite tread plates ..	Tufnol Limited
Plywood, ceiling ..	W. A. Bonnell Limited
Plug valves	Newman Hender & Co. Ltd.
Onozote insulation ..	Expanded Rubber Co. Ltd.
Fibreglass	W. Gilmour Smith & Co. Ltd.
Main underframe structural members	Round Oak Steel Works Limited Appleby-Frodingham Steel Co. Ltd.
Body structural members and plate	Patent Shaft & Axletree Co. Ltd.

Two Major Bridges in New Zealand

Steel and concrete structures $\frac{1}{4}$ mile and 500 ft. long

TWO major bridge replacements are about to be undertaken by New Zealand Railways between Wellington and Palmerston North. Tenders were invited recently for construction of the substructures of these new bridges across the Manawatu River south of Longburn and across the entrance to Paremata Inlet, between Paremata and Mana.

In both instances, the new structures will replace timber truss bridges erected by the Wellington and Manawatu Railway Company in 1885. Though strengthened from time to time to enable them to carry heavier traffic, their useful life is now approaching its close.

New Manawatu Bridge

Mr. C. Clark, the Chief Civil Engineer of the Railways Department, said recently that the new Manawatu bridge would be located about half-a-mile downstream from the existing structure. It would comprise 20 60-ft. steel spans erected on reinforced-concrete piers founded on piles driven into the bed of the river. A 1½-mile deviation would be required, replacing two miles of the present line, and the opportunity would be taken to use much more gradual approach curves to the bridge, enabling higher speeds to be maintained.

Tenders have also been called, both in New Zealand and overseas, for the supply and fabrication of the steel spans, which will require 384 tons of steel. Material already in the country and earmarked for other bridges will fully employ the resources of railway workshops for some years.

Paremata Inlet Bridge

At Paremata, the new bridge will be erected a short distance to the west of the present one and will be on the new alignment for the double-track railway to be laid between Porirua and Plimmerton. Mr. Clark said that this bridge would comprise 12 30-ft. spans and two 55-ft. navigation spans, and that its design had been decided in consultation with the Marine Department. Clearances above tidal levels will be the same as for the existing highway bridge. Long prestressed concrete piles will be driven into the seabed to carry the piers. The steel spans for this bridge are being fabricated in railway workshops.

This new Paremata bridge will be brought into use for a single line of railway at first. The second track will be laid later, when the major section of the deviation and duplication northward from Porirua is nearing completion.

Contract periods allowed for completion of the substructure are eight months for the Paremata bridge and 12 months for the Manawatu bridge at Longburn. Planning provides for the steel spans to be ready for erection when the piers are completed. Tracklaying would then follow as quickly as possible.

C.N.R. FILM ON NEW CONSTRUCTION.—Five Canadian National Railways lines under construction are featured in a film, "Railroad Builders of the North", recently released by the C.N.R. The film runs for 28 min. It is available from Canadian National Railways passenger agents' offices for group showings.

Re-lining of Whitehaven Tunnel Completed

Increased clearances and wider curves

THE Chief Civil Engineer of British Railways, London Midland Region, Mr. J. Taylor Thompson, recently placed in position the last stone of the reconstructed Whitehaven Tunnel, so marking the completion of 26 years' work. During this time the old lining of the tunnel has been completely removed and replaced; increased clearances also were afforded and curves reduced. The tunnel was also strengthened at several points where it is crossed by roads. The job on this single-track ¼-mile-long tunnel between Carnforth and Whitehaven was carried out at night.

Whitehaven tunnel was built in 1845 to provide a direct link between two Whitehaven stations: Bransty, terminus of the Whitehaven Junction Railway, and Corkicle, that of the Whitehaven & Furness Junction Railway. A tunnel was necessary because the railways could not get powers to make an open cutting through the land of Lord Lonsdale and the park adjoining Whitehaven Castle.

The tunnel was lined with red sandstone and brick and, although the lining itself lasted for some 80 years before the combined effects of age and engine smoke caused serious deterioration, distortion of the tunnel was evident as early as 1874.

Rebuilding began in 1932

Between 1923 and 1931 constant repair work was going on and in 1932 parts of the tunnel had to be rebuilt because distortion and movement of the walls and arch were causing clearances to traffic to be dangerously reduced. Between 1932 and 1935 about 300 ft. of tunnel, not in one length, was rebuilt, with, in addition, a considerable length of side walls only.

At this stage complete renewal was not foreseen and the original horseshoe shape of the tunnel and height of 16 ft. 8 in. was adhered to but with an increase from 13 ft. 6 in. to 14 ft. wide at the waist.

However, as rebuilding progressed it became evident that the tunnel needed re-lining throughout; but the pattern had been set by the sections already rebuilt. Complete re-lining was decided upon by the Chief Engineer of the L.M.S.R. in 1935, the work to be authorised on a yearly basis.

The tunnel had varying gradients. From the Corkicle and falling 1 in 371 for 467 yd., 1 in 325 for 135 yd., 1 in 186 for 135 yd., 1 in 1,043 for 400 yd. and rising 1 in 300 for 183 yd. The track was straight and curved with 40-ch. curves and the strata largely mudstone, which rapidly breaks down when exposed to air and water, and some gravel. The sandstone lining was perished and there were some wet places; a 5 m.p.h. speed restriction was necessary while these conditions obtained.

Besides complete re-lining, it was decided also to improve the alignment of the tunnel but here the freedom to slew the track was limited by the difference in width of the temporary rail centres and the proposed new profile. Nevertheless, it was found possible to introduce transitions on the curves and the correction of the curvature was done by the Hallade method. The length of the tunnel allowed work to be done at several places simultaneously.

Because of limited clearances, work inside the tunnel required complete possession; and for a long period this meant working only 5-6 hr. a night with 18 or 19 men. At one time complete closure to speed up the work was considered but found impracticable due to the heavy cost of bringing diversionary lines into use. When in 1939 it was agreed as an alternative to increase the number of men at work, the war made this impossible.

Foundation and Ballast Renewed

The general scheme consisted of removing the old lining of the tunnel, forming new concrete foundation 3-4 ft. below rail level on solid rock and building a new lining in engineering brick 5 to 6 courses thick. After the re-lining, the rock foundation was lowered to give a minimum depth of 6 in. of ballast below sleepers and trimmed to fall to new drains on each side of the tunnel. The track was re-ballasted throughout.

The original dimensions of the tunnel were: 16 ft. 8 in. above rail at centre, 13 ft. 6 in. wide at waist reduced at some places to 11 ft. 5 in. by distortion and movement of walls. The new dimensions are 16 ft. 8 in. above rail at centre and 14 ft. wide at waist.

The method of working involved the use of rail centres bent on flat which were erected in shapes to suit the existing distorted lining. The feet of these were carried on rails laid on the flat on 12 in. × 6 in. sole timbers. At times the clearances were so small that recesses had to be cut in the walls to allow vehicular clearance. Initially three lengths of 8 ft. were lagged and strutted and demolition of the centre section started at the crown. The lining or rock was then excavated to the requisite dimension to provide space for the new work. The excavation was then carried down to provide a good bearing for the foundations which were laid to a predetermined line level and gradient. The new brickwork was then built up to the revised profile.

Difficulties were met with at a number of points, among them Bransty, where a retaining wall was built in sections in trench behind the old tunnel, which at its skew entrance was heavily surcharged. This involved a temporary bridge to carry road traffic to a local coal mine. Finally a new bridge of rolled steel joints was substituted for the tunnel lining and this gave a wider entrance and allowed improvement of the permanent way. The completion of this part of the work allowed a track slew of 1 ft. 11 in. and the elimination of a very troublesome 1 in 6 lead with A switches which lay inside the tunnel. This involved partial reconstruction of the adjacent Bransty down platform.

Another major job was done at the point where the main Workington-Whitehaven road crosses the tunnel. Here the bricks of the extrados of the tunnel could be seen in the gutter of this busy but unfortunately wide roadway. Because the road and tunnel cross on the skew and gradients are favourable, the cover increased to 1 ft. 3 in. at the centre of the road and about 3 ft. on the opposite side.

A reinforced concrete saddle was built in sections over the old tunnel to carry road traffic and the re-lining was carried out below without interference. The levels were such that the height of the new work at the centre of the track had to be reduced from 16 ft. 8 in. to 15 ft. 4 in.

At another point, where the tunnel is crossed by the main Whitehaven-Egremont road, the work was complicated by the proximity of a sewer. The roadway crossed the tunnel on the skew and the cover was 9 ft. The sewer, of brick circular section, was known to pass over the tunnel at this point but, owing to the long distance between manholes and the road being on a curve, its exact position was not known.

Two separate bridges of 58 ft. rolled steel joists were built to carry road traffic and excavation between them exposed the sewer. As space between the tunnel and the sewer was only 1 ft. 6 in. care had to be exercised to prevent damage to the sewer as the old tunnel lining was removed from beneath it. With the agreement of the Borough Engineer a flume of mild steel plate of U section with a flat cover was fitted inside the circular sewer over a length of 42 ft. This was connected at each end to the brick sewer at a new manhole. On completion of the tunnel relining below, the flume was encased in concrete.

Underpinning Adjacent Buildings

A short distance from this point another temporary bridge had to be built to carry road traffic on the Coach Road which crosses the tunnel. Other work in this area included the underpinning of a tall building alongside the main road and the removal of part of a 4 ft. 6 in. internal dia. culvert over the tunnel.

The last problem was the renewal under the G.P.O. repeater station near the Corkicle end of the tunnel. This brick building, which contains many

(*Continued on page* 428)

Journal Stops for Wagon-Type Plain Bearings

Increased life and fewer hot boxes on U.S.A. railway vehicles

THE Association of American Railroads standards for freight wagon bogie allow of an assembly that with the exception of wheel assemblies and bearings is substantially in the rough, keeping costs to a minimum. The sideframes and bolsters are applied in their "as cast" condition with only a small amount of chipping and grinding to remove roughness that interferes with assembly.

As the inside crown of the journal box does not have a machine finish and is subject to variations in the "as cast" condition, it is necessary to provide a bearing application loaded in such a manner that it will not pinch under any condition of loading. This is accomplished with the "steeple-back" bearing which takes its loading on a width approximately one half of the journal dia. Although this design gives an almost-perfect transmission of load to the bearing, it has the weakness that it is susceptible to upset by heavy impacts, as from shunting and so on. The assembly of the "steeple-back" bearing is shown in Fig. 1. A more stable bearing assembly results from a flat-back bearing but does not retain the desired loading of the bearing. With irregularities in the crown of the box, the flat-back bearing is susceptible to loading at its outer edges, resulting in a pinching condition that starves the oil flow. This type of bearing has been tested and its stabilising advantage is more than offset by its loading disadvantage.

In a new A.A.R. journal bearing assembly, with all dimensions nominal and journals central laterally, the maximum displacement from impact is $\frac{7}{16}$ in. With a slight lateral displacement of axle or box, the maximum displacement from impact will increase to $\frac{11}{16}$ in. in one of the bearing assemblies. Under the batter of shunting impacts, this quickly increases and on older vehicles it is not uncommon to find the journals can be displaced $\frac{1}{4}$ in. to 1 in. out of their bearings by impacts, regardless of lateral positioning. Such displacement of the journal flattens the lining of the bearing, destroying or modifying the seat that is essential to maintenance of an oil film, greatly reduces the service life of the journal bearing, destroys the dust guards, and with waste packing is a source of waste grabs that starve the oil flow with a resultant overheating of the bearing.

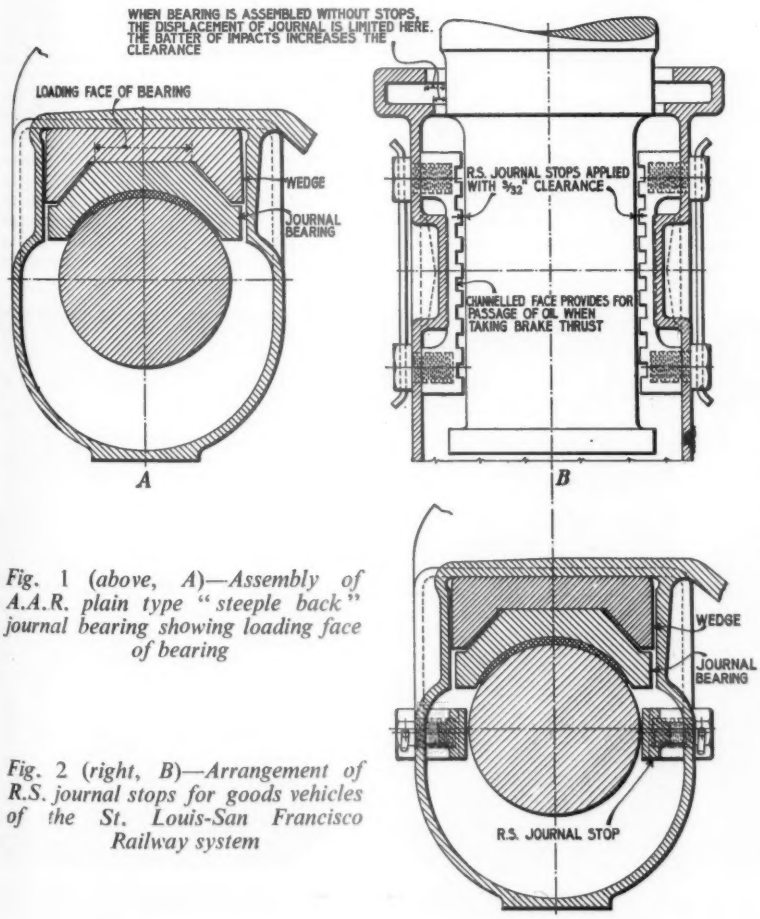

WHEN BEARING IS ASSEMBLED WITHOUT STOPS, THE DISPLACEMENT OF JOURNAL IS LIMITED HERE. THE BATTER OF IMPACTS INCREASES THE CLEARANCE
LOADING FACE OF BEARING
WEDGE
JOURNAL BEARING
A
R.S. JOURNAL STOPS APPLIED WITH 3/32" CLEARANCE
CHANNELLED FACE PROVIDES FOR PASSAGE OF OIL WHEN TAKING BRAKE THRUST
B
WEDGE
JOURNAL BEARING
R.S. JOURNAL STOP

Fig. 1 (above, A)—Assembly of A.A.R. plain type "steeple back" journal bearing showing loading face of bearing

Fig. 2 (right, B)—Arrangement of R.S. journal stops for goods vehicles of the St. Louis-San Francisco Railway system

Plain Bearing Performance

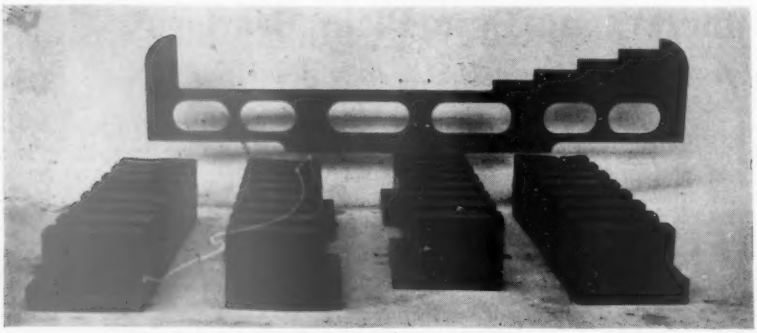
Analysing the A.A.R. standard plain bearing assembly in 1951, Mr. J. L. Ryan, Mechanical Engineer of the St. Louis-San Francisco Railway System, decided that given a satisfactory means of stabilisation, the plain bearing has an excellent performance potential. Bronze stops, cap screwed to the side walls of the journal box to prevent displacement of the journal out of its bearing were considered the most practicable means to achieve the desired stablisation.

The journal stop was designed realising that there was a problem greater than taking the split-second contact of the journal in shunting or similar impacts. With all 40-, 50- and 70-ton vehicles having single-shoe brakes, the journal stop applied with close clearance will take a high percentage of the thrust from the brake shoe. On a cost basis it was impractical to consider an application that would not involve high unit pressure under heavy braking. A 14-16 per cent lead bronze was decided on for the material. The face of the stop in contact with the journal contact was designed with alternating contact areas and channels, the latter to ensure an uninterrupted supply of oil to prevent starving the oil flow to the journal bearing under heavy braking, particularly on long descending grades. The channelled face and clearance design of the Magnus RS design is shown in Fig. 2.

In this form, the journal stop castings are bolted to the inside walls of the box on either side of the journal. Properly installed, they limit the permissible fore-and-aft journal motion to $\frac{3}{32}$ in. in either direction. Under impact or braking forces, the journal comes in contact with the stop on the side of the box toward which it would normally be deflected and any further travel is prevented. All journal box elements are stabilised and kept within their normal operating positions at all times, the permissible $\frac{3}{32}$ in. motion being insufficient to displace bearing or wedge to any appreciable degree. Contact with the journal occurs only under impact or braking reducing wear considerably. The A.A.R. supervised a test over a 20-mile run with the brakes on one vehicle rigged so as to give a constant contact between the journal and the stops. The temperature was recorded every 30 sec. during the run and showed a maximum of only 200 deg. F.

Operating Experience

Journal stops of the Magnus R-S design were first installed by the St. Louis & San Francisco Railway experimentally in December, 1951. The fol-



Condition of journal stops after 155,000 *miles of service*

lowing year, the system extended the application of these stops to eight other vehicles, and in 1954 fitted 100 "auto box cars" built by Pullman Standard Car Manufacturing Company with them also.

The device has now been applied to a large number of vehicles operated by railway systems and private owners. Experience has indicated that their application has reduced the number of hot boxes, and the amount of maintenance required; at least doubled bearing life, reduced dust guard damage and wheel flange wear.

Results from 2,875 vehicles fitted with the stops which have accumulated over 32,000 vehicle-months of service, indicate that there have been only seven hot boxes from all causes. This is equivalent to slightly more than 6,000,000 vehicle-miles per hot box.

Impact tests conducted by the A.A.R. are stated to have shown that such devices almost eliminate the need for servicing journal boxes after shunting. For example, one bogie of a vehicle equipped with the stops required no servicing, while the other bogie, identical in all other respects, required attention to packing in two to four boxes after each impact at various speeds up to 11½ m.p.h. So far, no hot boxes due to "waste grab" on vehicles equipped with the stops have been reported; whereas on some railways up to 70 per cent of all hot boxes are stated to be the result of such "grabs." Impact tests have not been necessary with pad lubricators which, because of their unit construction, are even more readily confined in position by the stops.

Increased Life

The increased bearing life obtained with the journal stops is principally because of reduced end wear and the elimination of spread linings. Lateral thrusts are more uniformly applied and more evenly absorbed on both the collar and lug ends of the bearing because of reduced bogie skewing. Collar end protection is also afforded because the axle is prevented from striking the dustguard.

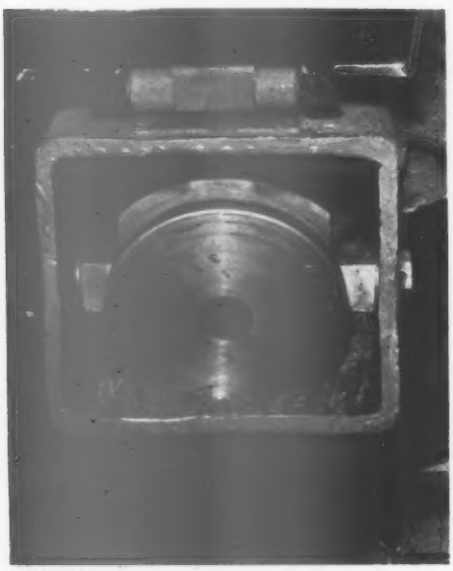
The elimination of excessive bogie skewing also results in reduced wear on wheel flanges, although the extent of this improvement is not known exactly at present. However, in the case of one Frisco vehicle inspected after 63 months' service the wheels did not show any measurable flange wear, it is stated. There appeared to be no flange wear from an original "one-wear" wheel contour. A wheel of this vehicle is shown in the right hand illustration below.

Wear of Bearings

The first vehicle of the St. L. & S.F.R. to be fitted with the stops (in December, 1951) was a bogie ballast wagon. This had one bogie equipped with stops, the other being left as standard. This vehicle was inspected in March, 1957, after 155,000 miles of service. The four bearings, equipped with R-S journal stops, indicated $\frac{1}{32}$-$\frac{1}{16}$ in. end wear and lining surfaces had a perfect bearing area; therefore, all four bearing were replaced for further service. Stops themselves indicated $\frac{1}{32}$-$\frac{3}{64}$ in. surface wear from their original condition. This is shown in the accompanying illustration.

Inspection of the other bogie resulted in all four journal bearings being replaced after 11 months' service or after the previous inspection in April, 1956. Although some of the bearings could probably have given further service, it was decided to replace the bearings to prevent any possibility of trouble between inspection periods. The condition of the bearings was found as follows:—wear on collar end, and lug end respectively (in.); $\frac{1}{8}$, $\frac{1}{32}$, $\frac{1}{4}$, $\frac{1}{64}$; $\frac{1}{8}$, $\frac{1}{64}$; $\frac{3}{32}$, $\frac{1}{32}$.

On completion of its 1957 programme, the St. Louis-San Francisco Railway will have 5743 vehicles equipped with journal stops. The journal stop is manufactured by Magnus Metal Corporation, of New York, under the trade name Magnus RS. The designer was granted U.S. Patent No. 2,733,966 and Canadian Patent No. 529,010 covering this development.

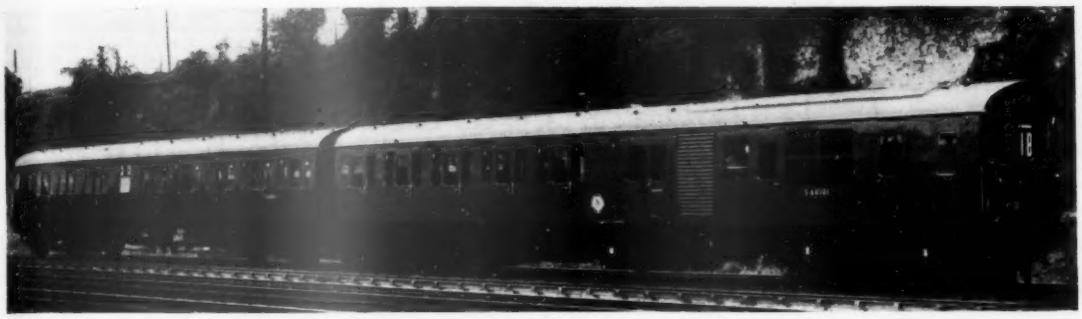


R.S. journal stop bearing assembly

Condition of wheel after 63 *months' service*

Operation of Diesel Railcars in Hampshire

Marked increase in traffic, and operating economies after introduction of twin-car sets in Southern Region



Two-car 600-b.h.p. 86-ton diesel-electric formation for branch line and secondary trains

MORE frequent services and a considerable reduction in journey times compared with the then existing steam schedules were introduced by the Southern Region of British Railways on certain routes in the Hampshire area with the winter timetables of September of last year. These were made possible by the use of 10 500-h.p. two-car diesel-electric train sets described in our issue of October 4, 1957.

Two months later a further eight two-car sets were placed in service and until a few weeks ago a total of 18 sets were in service, with 17 sets effective at any one time. The places principally affected were Portsmouth, Southampton, Salisbury and Winchester; the accompanying map shows the services in the area on which diesel operation has been introduced. Recently the total in effective service has been reduced to 16 as mileages of 70,000 to 75,000 per set have been attained and tyre re-turning has become necessary. With schedules as they were until the beginning of the summer timetable, each set was operating a mileage equivalent to almost 120,000 a year. Fuel consumption has averaged 0·4 gal. per train-mile.

Basis of Operation

From the point of view of the public the basis of operation was 20 to 25 per cent acceleration in timings plus more frequent services on an interval scheme. From the railway point of view, the basis was high mileage per set, quick turn-round times at terminals, concentration of all maintenance at Eastleigh, and fuelling points only at Eastleigh and Fratton. There is considerable saving in rolling stock mileage. Previously steam trains of up to 10 coaches were run on the Portsmouth-Salisbury line and those on other lines consisted of three or four coaches. The results have been impressive. With an average of 14 sets in operation at any one time, an aggregate mileage of 40,107 train-miles a week is accumulated. There was an increase of 29 per cent in the number of passengers carried during the first six months, to 1,517,550 from 1,176,480 in the corresponding period of the previous year; and there has been a similar increase in the receipts, while operating expenses per mile compared with steam traction have decreased; but the present annual mileage of 2,069,288 is considerably in excess of the previous steam traction figure of 869,804 miles a year. Traffic has developed through the use of diesel traction and new timetables much faster than was anticipated; and to keep step with the requirements, steps are being taken to increase the number of vehicles. There has been a rearrangement of staff as a result of the introduction of diesel units; and over the lines covered there has been a reduction of 20 men.

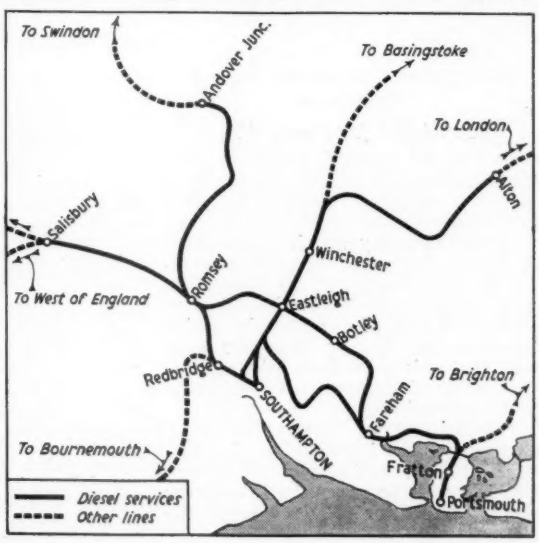
Maintenance

In general, the two-car sets are stabled at Eastleigh, but a few sets are berthed out overnight at Salisbury and Fratton. The maintenance depot at Eastleigh is a new building 160 ft. long, with each track able to take a two-car formation under cover. Here, in addition to the normal servicing and light maintenance facilities, there are carriage sidings and cleaning stages; but at Fratton the sets also pass at regular intervals through the existing carriage - washing machine.

Daily examinations of engine, electrical equipment and mechanical portions are made while the sets are being refuelled and replenished at Eastleigh, and also at Fratton. This examination is to a strict routine, as is the more comprehensive weekly one when air and lubrication oil filters are also cleaned. Brake equipment and rigging also is inspected and adjusted; and the accelerated timings and comparatively high mileage for secondary and local service with frequent stops have resulted in a change of brake blocks being needed almost every week, though those on the trailers have a somewhat longer life than those of the railcars. Modifications have been made to the bogie springing to improve the riding at speed.

Increased Power

One major change has been made to the English Electric four-cylinder 4SRKT-type oil engine, with 10 in. by 12 in. cylinders; this is the fitting of a larger pressure-charger, whereby the output per engine has been raised from 500 to 600 b.h.p., so that present timings can be maintained when a second trailer is brought into the formation. On the top output at 850 r.p.m. this means a present b.m.p. of 149 lb. per sq. in. and a piston speed of 1,700 ft. per min. The oil is thoroughly checked once a month, when the valve gear, lubricating oil flow, bearings and so on are inspected



Lines in Hampshire served by diesel trains

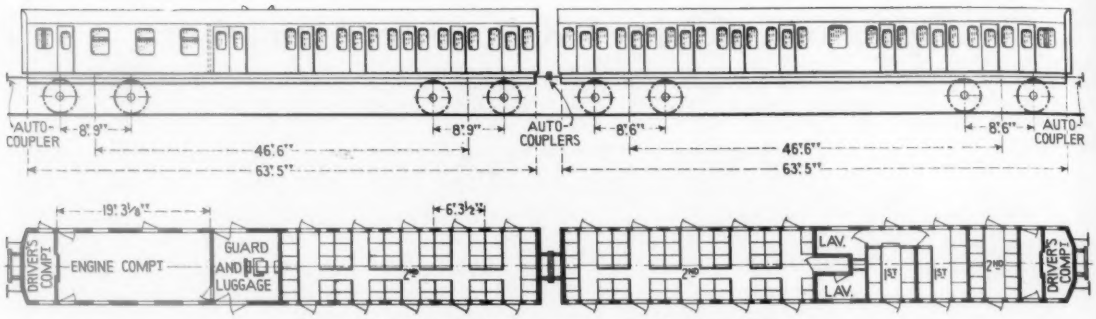


Diagram of Hampshire two-car set, Southern Region

and checked. Every third month the fuel pump timing is also checked, and every sixth month the whole of the engine crankcase is examined internally.

On the basis of the more lengthy experience with similar 500 b.h.p. engines installed in the six-car Hastings trains, the expectation is that the engines will not require intermediate overhaul before 150,000 miles and a full overhaul until 450,000 miles. For these overhauls the engines will be withdrawn and spare units put in, the withdrawn engine then going to the diesel engine repair shop now being set up at Eastleigh. Special four-wheel wagons are being provided for the transport of engines between the different diesel depots on the Southern Region and the works. Overhaul of the mechanical and electrical gear is to be based on the practice in force for the extensive multiple-unit 600-V. d.c. electric stock.

New diesel railcar depot at Eastleigh

Performance of Equipment

On these twin-car trains and on the identical power equipments of the Hastings six-car sets there have been few main equipment failures. Most defects have involved the auxiliary electrical, mechanical, and brake equipment. No major modifications have been found necessary, but a number of minor ones have been made or are in hand. A noticeable one has been the fitting of silencers; also the crankcase breather pipe has been carried to a position just under the radiator fan to reduce internal pressure in the crankcase; and a wax thermostat in the cooling system has replaced the original bi-metal type which had inadequate operating forces.

Increased Accommodation

The popularity of these trains has resulted in the recent decision of the Region to strengthen all sets by the addition of a non-driving trailer coach to each, thus forming three-car sets of 600-h.p., up-rated from 500-h.p. as mentioned above, and to build a further four three-car sets of the same design.

Re-lining of Whitehaven Tunnel Completed

(*Concluded from page* 424)

thousands of pounds' worth of electrical equipment, stands directly over the tunnel which lies about 9 ft. below it. Underpinning would have been difficult and costly and it was decided to ask the miners to be specially careful in excavation and to follow up very closely with their timbering to avoid any loss of the material which lay between. It says much for their skill that this was done without any complaint of damage from the Post Office authorities.

The final item of work on the tunnel renewal was the introduction of a new portal 100 ft. behind the old one at Corkicle and the removal of the cover and the demolition of this length of the old tunnel.

The work was started under the direction of Mr. W. K. Wallace, then Chief Civil Engineer of the L.M.S.R. He was succeeded by Mr. J. W. Briggs, also Chief Engineer of the L.M. Region, and finally by Mr. J. Taylor Thompson. The District Engineer, Barrow, Mr. B. L. Bell, was responsible for the carrying out of the work to completion.

NEW EAST-WEST LINE FOR TORONTO TRANSIT COMMISSION.—Approval for the construction of the east-west underground line of the Toronto Transit Commission was reported in the Contracts and Tenders section of our September 19 issue. Detailed plans and specifications have not yet been completed and it is still not known what type of equipment and material will be required. In general, the work contemplated involves the extension of the present Yonge Street subway to the west under Front Street for about half a mile to University Avenue, then north under University Avenue for 1½ miles to Bloor Street. The line would then be constructed on private right-of-way north of Bloor Street, running east and west from Keele Street to Woodbine Avenue, a distance of about eight miles. The majority of the structure will be in concrete box, constructed by cut and cover methods, but there will be sections totalling about a mile and a half which will be constructed in twin tunnels, with cast iron lining. The total estimated cost is $200,000,000. The project is expected to take 10 years to complete.

NEW ROAD MOTOR WORKSHOP AT BIRMINGHAM FOR THE L.M. REGION.—A start has been made on the building of a road motor engineers workshop at Garrison Street, Birmingham, for the overhaul and repair of the large fleet of motor vehicles operated in and around the city by British Railways, London Midland Region. Since 194 the railway's road cartage fleet in this area has grown from 245 vehicles and 400 trailers to a total of 579 vehicles and 1,170 trailers.

RAILWAY NEWS SECTION

PERSONAL

Sir John Forster has been reappointed President of the Industrial Court of the Ministry of Labour for a further period up to December 1, 1960. Sir John has been President of the Court since January, 1946.

Mr. S. A. Fitch, Chief Operating Superintendent, Southern Region, British Railways, who, as recorded in our August 15 issue, has been appointed Assistant General Manager (Traffic), entered the service of the South Eastern & Chatham Railway in 1911. He saw active service during the 1914-18 war; was awarded the Distinguished Conduct Medal and the Military Medal; and, in 1918, received an Infantry commission. On his return to railway duties he was appointed to the Office of the Superintendent of the Line. From 1924 to 1938, he held various positions with the Southern Railway, including those of Assistant Stationmaster, Victoria; Assistant Agent, Nine Elms; Assistant to London Central Divisional Superintendent, and Assistant Divisional Superintendent, London East, and London West, Divisions. He subsequently became General Assistant to the Traffic Manager. When the 1939-45 war broke out he was posted to the Aldershot Command as Railway Liaison Officer, returning to his position of General Assistant to the Traffic Manager after the evacuation from France, and later becoming Acting General Purposes Officer to the General Manager. Mr. Fitch, who had recently been appointed an M.B.E., proceeded again on active service as Deputy-Director (Railways), 21st Army Group, with the rank of Colonel, and for services in North-West Europe was appointed an O.B.E. (Mil.). On his return to the Southern Railway in 1945, he was appointed Assistant Superintendent of Operation. In the next year he was one of a party of Southern Railway Officers which visited the U.S.A. and Canada to study developments in diesel traction. Mr. Fitch became Assistant Operating Superintendent, London Midland Region, in 1949, and was appointed Superintendent of Operation, Southern Region, in 1954. The designation of the latter appointment was changed, shortly after, to that of Chief Operating Superintendent. Mr. Fitch is a past Member of the Council of the Institute of Transport.

In connection with the first stage of the Southern Region's new traffic organisation, the following South Eastern Divisional appointments are announced in adition to those recorded elsewhere in these pages:—Mr. L. J. Cox as Operating Assistant; Mr. J. K. Blue as Passenger Commercial Assistant; Mr. A. Blaker as Modernisation Assistant; Mr. A. C. J. Payne as Freight Assistant, and Mr. L. C. Lawrence as Staff Assistant.

Mr. P. A. White, Assistant Operating Superintendent (Modernisation), Southern Region, British Railways, who, as recorded in our August 15 issue, has been appointed Line Traffic Manager, South Eastern Division, Southern Region, began his railway career as a probationer with the South Eastern & Chatham Railway in 1919. He entered the Office of the Superintendent of the Line in 1922 and, on the formation of the Southern Railway in 1923, transferred to the Timetable Department in the Chief Operating Superintendent's Office. He was subsequently moved to the Passenger Rolling Stock Department in the same office and was made Assistant to Divisional Superintendent, London East, in 1938, becoming Acting Assistant Divisional Superintendent for that division in 1942. Mr. White was appointed Acting Assistant Divisional Superintendent, Western Division, in 1943, and Assistant Divisional Superintendent for the same Division in 1946. He became Assistant to Superintendent of Operation in 1947, District Traffic Superintendent, Woking, in 1951, and Assistant Operating Superintendent in 1956. Mr. White is a member of the Institute of Transport.

We regret to record the death of Mr. A. E. Roberts, Technical Railway Representative, Transport Brakes Limited, and formerly Rolling Stock Engineer, Southern Region, British Railways.

Mr. S. A. Fitch
Appointed Assistant General Manager (Traffic), Southern Region

Mr. P. A. White
Appointed Line Traffic Manager, S.E. Division, Southern Region

Mr. A. Earle Edwards
Appointed Operating Officer, Southern Region

Mr. G. Wynne Davies
Appointed Commercial Officer, Southern Region

Mr. G. Weeden
Appointed Motive Power Officer, Southern Region

Mr. A. Earle Edwards, Traffic Superintendent, London (Eastern) District, Southern Region, British Railways, who, as recorded in our August 15 issue, has been appointed Operating Officer at headquarters, Waterloo, was born in 1901. He began his career with the South Eastern & Chatham Railway in 1917. In 1931, after training as a cadet, he was appointed Assistant Western Divisional Superintendent at Exeter Central and, in 1934, Senior Assistant Divisional Superintendent there. He was a Director of the Sutton Harbour Improvement Company at Plymouth from 1934 to 1939, and a member of the Exeter & District Traders' Panel. At the outbreak of war he was temporarily transferred to Southampton as Assistant Divisional Superintendent. In 1943, Mr. Earle Edwards went to Deepdene Headquarters as Acting Assistant for Train Services to the Superintendent of Operation. In 1944 he was appointed Acting Assistant for Planning to the General Manager, and represented the Southern Railway on the Railway Companies' Association Commission for Post-War Planning. In 1944 he was transferred to Woking as Senior Assistant Divisional Superintendent (London West Division), and three years later was appointed Divisional Superintendent, Southern Division, Southampton, which post was subsequently redesignated District Traffic Superintendent, Southampton. During his period at Southampton he was a Commissioner for Poole Harbour. In 1951, he was appointed Traffic Superintendent, London (Eastern) District at Orpington. Mr. Earle Edwards was Chairman of the committee of the Metropolitan Graduate & Student Society of the Institute of Transport in 1930 and was a member of the council of that body from 1951 to 1954.

Mr. G. Wynne Davies, O.B.E., E.R.D., M.A., M.Inst.T., who, as recorded in our August 15 issue, has been appointed Commercial Officer, Southern Region, British Railways, was educated at Repton and Clare College, Cambridge. He joined the Southern Railway in 1926, and, in 1928, was selected as one of the first of its cadets. He was appointed Assistant to the Road Transport Liaison Officer in 1932. In 1935 he became Assistant to the London (East) Divisional Superintendents; in 1938, General Purposes Officer to the General Manager and, in 1943, Assistant Secretary to the company. Mr. Wynne Davies served in France, North Africa, and Italy, and in the U.K. He was mentioned in dispatches four times, awarded an O.B.E. (Military Division), and attained the rank of Colonel. On his return to the Southern Railway he became Assistant Public Relations & Advertising Officer, until he assumed the responsibilities of the Public Relations & Advertising Officer, Southern Region, British Railways. From 1948 to 1953 he was Publicity Officer to the Railway Executive, and in 1954 was appointed Assistant Commercial Superintendent, Southern Region.

Mr. T. R. V. Bolland, Assistant to the Chief Operating Superintendent, Southern Region, British Railways, who has been appointed Traffic Superintendent in the new South Eastern Division Line Traffic Manager's organisation, joined the Southern Railway as a cadet in 1946. After three years' training in all departments, he gained experience in the three London traffic districts between 1949 and 1952. He then was appointed Assistant to the District Traffic Superintendent, Redhill, and became Assistant District Traffic Superintendent, Woking, in 1954. He was appointed Assistant to the Chief Operating Superintendent in 1957.

Mr. George Weeden, who, as recorded in our August 15 issue, has been appointed Motive Power Officer, Southern Region, British Railways, was educated at West Ham Municipal College and Queen Mary College (University of London). He joined the L.N.E.R. as a fitter's apprentice at Stratford in 1931 and was awarded a L.N.E.R. Director's full-time scholarship. In 1937 Mr. Weeden was awarded the first locomotive running graduateship for special training in the Mechanical & Electrical Engineer's, Motive Power, and Accountants Departments of the L.N.E.R. He received further training as a supernumerary running shed foreman at Cambridge in 1939, and was appointed Running (Shift) Foreman, Stratford, in 1942. Mr. Weeden received appointments as Locomotive Shedmaster at South Lynn in 1943; at Stockport & Heaton Mersey, under the closer working arrangements of the L.M.S.R. and L.N.E.R., in 1944; at Eastfield, Glasgow, in 1944; and at Kings Cross in 1947. In 1949 he became Assistant District Motive Power Superintendent, Stratford, Eastern Region, British Railways. In 1952 Mr. Weeden was appointed Assistant to the Motive Power Superintendent (Mechanical), Southern Region. In September, 1955, he became District Motive Power Superintendent, Stewarts Lane, and was made Acting Assistant Motive Power Superintendent in January of this year.

Mr. T. E. Jackson, District Goods Manager, London Bridge, Southern Region, British Railways, who has been appointed Freight Commercial Officer, South Eastern Division, joined the former Midland Railway in 1915 and was subsequently a member of the Chief Goods Manager's personal staff. After the formation of the L.M.S. Railway, he went to Euston in 1925, and was made Deputy Head, Accommodation, New Works & Tenancy Section in 1931, and served later in the Goods Revenue Expansion Section. In 1936 he became Relief Goods Agent, London District and, in 1937, Goods Agent, Rochdale. He had previously served for a short period as Chief Clerk, Curzon Street Depot, Birmingham. Mr. Jackson was appointed Goods Agent, Oldham Road, Manchester, in 1942; Operating Assistant to the District Goods Manager, Manchester, in 1943; and Assistant District Goods Manager, at Bolton in 1944 and at Manchester in 1947. From 1948 to 1952 he was Assistant (Claims) to the Commercial Superintendent, London Midland Region. In 1952 he was appointed District Goods Superintendent, London Bridge, Southern Region, which post was re-designated District Goods Manager in 1955. In 1954 and 1956 he was Chairman of Metropolitan Conference and London Commercial Service Control Committee. Mr. Jackson is a Member of the Institute of Transport.

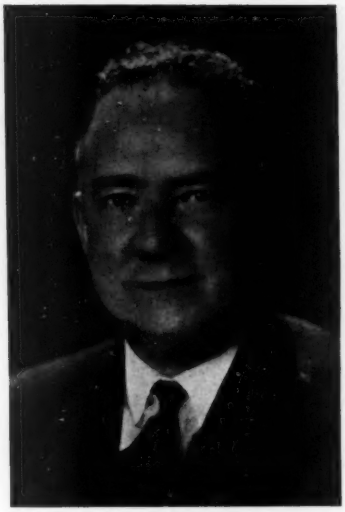
Mr. John Rodgers, A.M.I.Mech.E., A.M.I.Loco.E., District Motive Power

Mr. T. R. V. Bolland

Appointed Traffic Superintendent, S.E. Division, Southern Region

Mr. T. E. Jackson

Appointed Freight Commercial Officer, S.E. Division, Southern Region

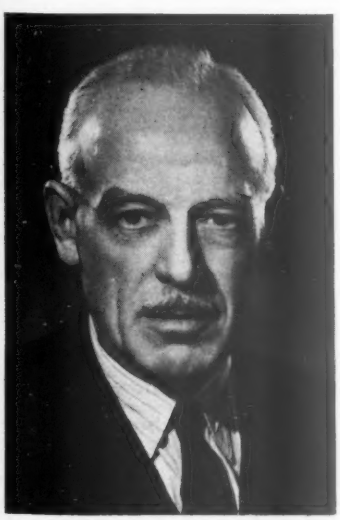


Mr. J. Rodgers

Appointed District Motive Power Superintendent, S.E Division, Southern Region

Superintendent, Brighton District, who has been appointed District Motive Power Superintendent, South Eastern Division, received his general education at Glasgow and Brighton. He began his railway career as Engineering Apprentice in 1920, under Colonel Billinton, at the former London Brighton & South Coast Railway Works at Brighton, and during this time was a student at Brighton Technical College. On January 1, 1928, Mr. Rodgers was appointed Technical Assistant in the Chief Mechanical Engineer's Testing Department. He was transferred to the Locomotive Running Department in 1933, and until 1945 was Locomotive Foreman successively at Yeovil, Tonbridge and Guildford. In 1945 he became Running Shed Superintendent at Exmouth Junction, and in 1947 was appointed Assistant (Mechanical) to the Motive Power Superintendent at Waterloo. On the introduction of the District Motive Power organisation in the Southern Region in February, 1950, Mr. Rodgers was appointed District Motive Power Superintendent, Brighton.

We regret to record the death, on September 23, of Mr. J. H. F. Benford, M.C., formerly Joint Commercial Manager, London Transport Executive. Mr. Benford saw war service from 1914 to 1920, during which time he was awarded the Military Cross, and was mentioned in despatches. He entered the service of the Underground Companies in 1920, in the Traffic Superintendent's office, London General Omnibus Company, and held positions in the Operating and Traffic Investigation Departments until 1933, when he entered the Vice-Chairman's office. Mr. Benford was appointed an Officer of the London Passenger Transport Board in 1937, and acted as Secretary to the Vice-Chairman's Traffic Committee until 1939, when he became Assistant to General Manager (Operation). In December, 1943, he was appointed Fares & Charges Officer. Mr. Benford became Commercial Manager in 1947 and from March, 1950, until his retirement in December of that year, he held that appointment jointly with Mr. D. McKenna.



The late Mr. J. H. F. Benford

Former Joint Commercial Manager, London Transport Executive

We regret to record the death on September 19, at the age of 62, of Mr. C. A. Gammon, M.I.Loco.E., Assistant (Wagon Design), Carriage & Wagon Engineering Department, British Transport Commission. Mr. Gammon received his training on the former London & North Western Railway at Wolverton Works and Technical College, afterwards entering the drawing office. On the inception of the L.M.S. Railway he moved to Derby and later to Euston headquarters, returning to Derby in 1939 as Technical Assistant (Carriages & Wagons). From 1934 to 1947 he was draughtsman to the Chief Mechanical Engineers' Committee. He was later appointed Technical Assistant Carriage & Wagon Engineering Department, London Midland Region, Derby, British Railways. He became Technical Assistant (Wagon Design), Carriage & Wagon Engineering Department, Railway Executive, in London in December, 1951, the position which he continued to hold on the formation of the British Transport Commission. He had been a member of several Railway Executive Committees, and was Chairman of the Wagon Standards, Wagon Handling Appliances, and Joint Technical Committees. Mr. Gammon was also the technical delegate of the former Railway Executive to the International Union of Railways (Rolling Stock), the International Wagon Union, International Container Bureau, and Interfrigo.

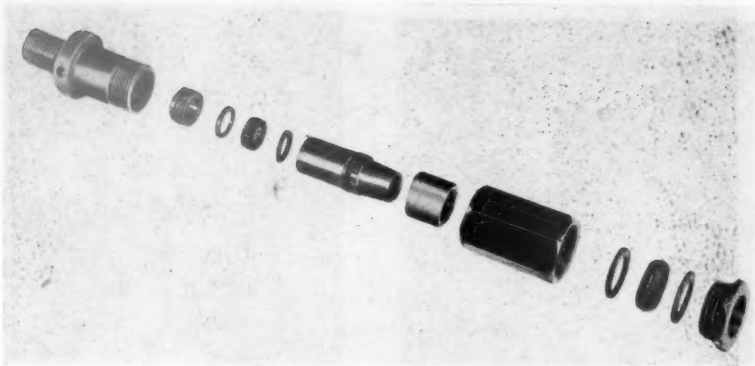
In the biography of Mr. H. D. Poole, published in our September 19 issue, 1908 instead of 1906 was given as the date when he joined the Brecon & Merthyr Railway.

We regret to record the death, on September 26, of Mr. R. J. Nisbet, Civil Engineer, formerly of Messrs. Rendel Palmer & Tritton.

The late Mr. C. A. Gammon

Assistant (Wagon Design), British Transport Commission, 1951-58

NEW EQUIPMENT AND PROCESSES



Flameproof Glands for Armoured Cables

THE F.G. range of glands has been designed for use with flameproof equipment and may be used in conjunction with either plastic or rubber insulated and sheathed, steel-wire armoured cables. The glands comply with BS.229 and have been approved by the Buxton Authorities for use under Group "2" and Group "3" conditions.

The design, which is patented, is stated to be technically in advance of any similar gland at present marketed, in that an internal flameproof escape path for gases has been incorporated, the length of the path being 1 in. (min.) and the width of the path 0.0035 in. (min.)—0.007 in. (max.).

As in the "G" and "B" series of glands, the armour wires are clamped between two cones and will withstand a tension appreciably greater than that specified in Clause "4" of BS.542. This clamping device also ensures good earth continuity between the armour and the gland.

To prevent the ingress of moisture, a seal on to the outer sheath of the cable is arranged, thus guarding against corrosion of the armouring wires. If further protection is needed, a p.v.c. sleeve is available, which completely encloses the gland and can be bonded to the gland and the sheath of p.v.c. sheathed cable by means of p.v.c. adhesive. The sleeve, incidentally, has in practice been found to provide a large measure of protection against corrosion without the use of an adhesive.

Full details may be obtained from the Telegraph Construction & Maintenance Co. Ltd., which company has developed the products in conjunction with the Light & Power Accessories Co., Ltd., Wellesley Works, Wellesley Road, London, N.22.

Compound Table

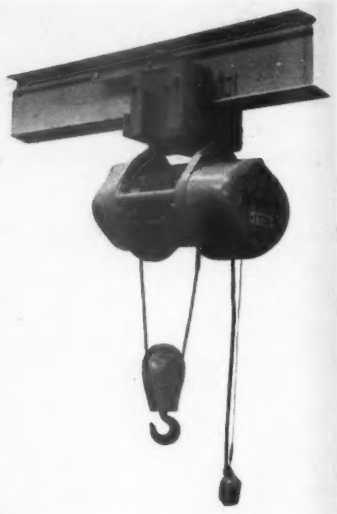
A COMPOUND table with a working surface of 18 in. × 10 in. has been designed, and is known as No. 1 size. The table gives longitudinal movement of 13 in. with a 6 in. cross movement.

The base size is 15 in. × 11½ in. and four bolt slots are arranged. A feature of the device is the height which has been limited to 5⅝ in. Handwheels with calibrations in 0·001-in. divisions are fitted to control both movements. The accurately machined table surface has a suds surround with provision for draining and incorporates two ⅝-in. tee slots at 4-in. centres.

All components are manufactured to fine limits and due care has been taken in the selection of materials to ensure stability and maintenance of the initial accuracy.

For general work use can be made of the two dial indicators; but for very accurate setting of the table, trays are provided for slip gauges.

Further details of the No. 1 compound table may be obtained from the manufacturer, Grimston Electric Tools Limited, Progress Way, Purley Way, Croydon, Surrey.



Electric Hoist Block

THE Matterson 101 electric hoist block is available in three forms—fixed suspension, runway hoist, and low headroom trolley. The basic hoist block in fixed suspension or pedestal mounting form lifts 10 cwt. or 1 ton through 23 ft. at 20 f.p.m. The 10-cwt. model may be fitted with gears to lift at 40 f.p.m. Height of lift can be increased to 43 ft. with extended barrel. Creeping speed is also available with the extended barrel type.

If the hoist is to travel on a runway, a range of trolleys is available in push, hand-geared, and electric travelling form. The same trolley is used for 10 cwt. and 1 ton and all trolleys are adjustable on erection to suit any British r.s.j. from 3 in. to 6 in. wide. Creep speed hoisting is available on the extended barrel type.

Where headroom is limited, the low headroom trolley enables the hook to lift within 13 in. of the underside of the runway beam, a saving of 17 in. on standard models. The trolleys are adjustable on installation to suit any beam from 4 in. to 6 in. wide. Maximum height of lift is 23 ft. and creeping speed available on both models.

The 101 embodies all the well-proven characteristics of the manufacturer's larger hoists. It is designed to withstand arduous treatment, all the components being designed with a factor of safety not less than five. A 1½-h.p. squirrel cage, totally-

enclosed electric motor is supported at both ends inside the hoist barrel. The motor shaft running in ball bearings at 1,440 r.p.m., is extended to carry the brake drum at one end, and the motor pinion at the other.

The brake is a clip type, spigoted on the motor flange to ensure concentricity and even lining wear. Electro-magnets release the spring loaded shoes which are adjustable for wear with a single screw. Housed in a case suspended from the hoist, push buttons operate the hoisting and travelling motions only while they are kept depressed. Extra buttons are provided for creep speed.

The 101 hoist is manufactured by Matterson Limited, P.O. Box 31, Shawclough, Rochdale, Lancs.

Hydraulic Copying Lathe

THE Wyvern hydraulic copying lathe is suitable for the rapid production of parts for railway components. The machine has been developed to meet the need for an inexpensive hydraulic copying lathe with a wide range of versatility and also economical for the reproduction of small quantities. It is also stated to be useful in the production of moulds and intricate contours.

A high degree of accuracy can be obtained by the machine which can be operated by semi-skilled labour. A feature of the lathe is that it can be used as a normal centre lathe. The making of templates is usually simple and inexpensive. Electrics are centrally-operated through an illuminated remote control panel. The lathe can be supplied if desired with a hardened steel bed to approximately 600 Brinell, preserving the accuracy of the machine over a longer period.

Standard equipment supplied with the machine comprises a faceplate, driving plate, centre bush, Morse taper centres and fixed steady rest; additional equipment such as travelling steady and jaw and collet chucks can also be supplied.

The drive is by vee-belt from a 5 h.p. motor, giving 12 speeds, or alternatively by a two-speed motor with 24 speeds to the spindle in conjunction with a ball-bearing gearbox mounted on the cabinet leg. The position of this gearbox is stated to give the machine greater rigidity and cutting power and ensures a finer finish. The gears run in oil and an automatic brake is fitted; a Herbert double-friction clutch is also incorporated giving rapid speed change.

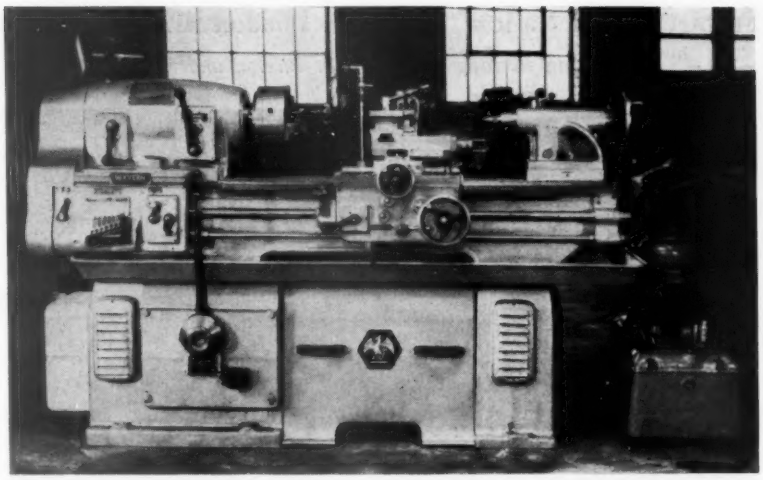
Particulars of the lathe include:—Swing overbed, 17 in.; swing in gap, 28 in.; swing over cross slide, 10 in.; range of longitudinal and cross feeds, 0.002-0.056 in. per rev; range of threads without changing gears, 4-56 t.p.i. The net weights of the 5- and 3-ft. machines are 3,136 and 3,696 lb. respectively.

The Wyvern hydraulic copying lathe is manufactured by Wyvern Machines Limited, Leicester.

P.V.P. in Barrier Cream

THE emulsion type of industrial barrier cream can be improved, it is claimed, by the addition of small quantities of p.v.p. (polyvinylpyrrolidone). This has the effect of enhancing the protective qualities of the cream, and also gives a softening action which persists even after the hands have been washed. The addition of p.v.p. assists the removal of dirt or grease and the hands are left in a particularly clean condition. Experiments which have been carried out show that the correct amount to use is between 0.5 and 1.5 per cent. of the total weight of the cream.

The invention, which is patented, relates only to the emulsion type of barrier cream. The British Oxygen Co. Ltd., Bridgewater House, Cleveland Row, London, S.W.1, is marketing pilot quantities of the raw material and would welcome enquiries from barrier cream manufacturers who might consider incorporating p.v.p. in their product.



Sheet Cutting Panel Saw

A NEW concept of panel saw, is stated to be made with the Pan-L-Saw, designed for the sheet-cutting industries using plastic, plywood, blockboard, hardboard and similar materials.

Tests on a wide variety of materials by the manufacturer, have resulted in the final design. It embodies, it is claimed, new principles for controlling the saw and cut while holding the material. It will size with increased accuracy, efficiency and output than previously possible.

The machine will cut cleanly up to one in. deep without spelching, scuffing or saw line fracture. The material is held firmly along the saw-line by a parallel-lift pressure beam which can be operated from any position along its length.

It is equally effective on single or multiple sheets. An automatic trip catch lowers the saw below the table and at the same time reverses its traverse. The saw dropping below the table on the return stroke allows immediate off-loading in safety.

Both when cutting and returning, the saw is unexposed and, therefore, operates with maximum safety. It can be controlled from the end or centre thus reducing the operator's movements to a minimum when sawing either wide or narrow sheets.

The machine is stated to occupy little more floor space than the sheet itself. Optional additions to the basic model include hand control, cut-out beam for stop-cutting, and index fingers for reeded and punched boards. The accompanying illustration shows the saw with the beam lowered to hold the stock, and the saw raised and partially through the cut.

The sheets to be cut are laid flat on the table, squared from a rear fence and gauged to the saw-line from inset rules or side gauge. They are then held down to the table by the overhead pressure beam. To commence cutting one of the control levers is moved which raises the saw above the table into the pressure beam gap and engages the forward traverse gear.

When the cut is complete the saw carriage strikes one of two pre-set, adjustable knock-off catches lowering the saw which returns at double its forward speed to the original starting position.

Full details of the Pan-L-Saw may be obtained from the manufacturer, Thomas Robinson & Son Ltd., Rochdale, Lancs.

Further Diesel Railcar Depots in London Midland Region

Servicing facilities completed at Buxton and Stoke

Inspection platforms and pits in the railcar depot ai Stoke-on-Trent. Lighting in the pits is by portable lamps plugged into points

Two servicing depots for diesel railcar sets have now been completed at Stoke and Buxton, London Midland Region. At each there are new sheds with inspection pits, workshops, stores, fuelling installations and staff amenity buildings. The Stoke depot, which is equipped for heavy maintenance, has three tracks running through a shed 454 ft. long; the Buxton shed which is 240 ft. long and has two tracks, is equipped for normal maintenance. Both depots have considerable open siding accommodation.

A feature of the construction is the method of supporting the tracks on short steel columns. With tracks elevated in this way, a shallower inspection pit is required.

Depot at Buxton

Depot facilities have been designed to service an allocation of nine three-car diesel sets. There is a shed for maintenance of the mechanical equipment of the trains and sidings for stabling and external washing. Trains allocated here are scheduled to operate between Buxton and Manchester London Road, to and from Millers Dale, and between Manchester and Crewe, and Stoke via Macclesfield.

The shed has two roads approximately 240 ft. long, both elevated throughout on the short steel columns over a shallow examination pit. Each road has standing capacity for one three-car set and is enclosed on both sides by raised platforms for daily maintenance of the carriage interiors.

Electric lighting plug points, power points, and battery charging points are fixed at intervals alongside the shed roads. Doors are fitted at the open end of the shed and outside these are placed the fuelling points which can serve either side of the train stock. The two fuel oil storage tanks are located in a compound in the yard and stand alongside a paved siding from which bulk oil supplies are discharged from rail tank wagons. The combined capacity of the tanks is 14,000 gal., and the installation includes a pump house and oil heating chamber.

The accommodation included in the shed building includes offices, stores rooms, fitters' shops, messroom, clothes drying room, lavatory, ablutions and boiler room; the last mentioned contains the oil-fired installation for space and water heating including hot water supplies for carriage washing.

The two roads approaching the shed from the shunting neck can each accommodate one three-car set. Facilities for stabling diesel trains elsewhere in the depot are provided by three sidings enclosed on both sides by washing platforms. Six three-car sets can be located in these sidings which are equipped at intervals with hot and cold water points. The washing platforms are illuminated.

Stoke-on-Trent

The railcar depot at Stoke is located in Cockshute Sidings and is additional to the existing covered accommodation for servicing carriage stock.

The diesel trains allocated to the depot operate on services to and from Manchester London Road, Uttoxeter, Stafford and Rugby via Birmingham; also between Manchester and Crewe and Buxton. The depot is designed for the daily servicing of 38 train sets besides the periodic heavy maintenance of these and other sets from depots not equipped to undertake heavy repairs.

A building has been constructed in the sidings for the examination and maintenance of the mechanical equipment of the trains. It is in the form of a shed approximately 454 ft. long by 84 ft. wide with offices, stores rooms and staff amenities on the north side and at the west end.

The shed portion spans three roads elevated the whole length of the shed. Two three-car sets can be stood on each of the shed roads; over the eastern half of the shed raised platforms placed on both sides of the roads, seen in the accompanying illustration, facilitate daily maintenance and carriage cleaning. Heavier maintenance work is carried out in the other half of the shed. Electric lighting plug points, power points, and battery charging points are located at intervals along the shed roads as at Buxton.

The open end of shed is fitted with doors outside which are placed the fuelling points serving either side of each shed road. The fuel oil storage compound, also having a maximum capacity of 14,000 gal., is placed alongside the new building and against a paved siding from which bulk supplies are discharged from rail tank wagons at the depot previously described. Each of the three approach roads to the shed has capacity to stand one three-car train. Other stabling accommodation, apart from the platformed carriage washing roads contained in the existing carriage shed, is provided by five sidings with an aggregate capacity of sixteen three-car sets and one two-car set.

The shed at Stoke was built by Edward Wood & Son Ltd., and that at Buxton by Leonard Fairclough Limited, under the direction of Mr. J. Taylor Thompson, Chief Civil Engineer, London Midland Region.

Work Begins on Bletchley Flyover, L.M. Region

Work began on September 29 on the Bletchley flyover which, when completed, will enable freight and coal traffic passing to and from London and beyond to by-pass the congested approaches to Euston and avoid haulage over the heavily used London routes. It is estimated that some 80 trains a day will be carried by the flyover.

The work is being carried out by Leonard Fairclough Limited and is the first of the large contracts to be placed for this project.

For ease of future maintenance it was decided that the structure should be of concrete and the design is such that whilst the main flyover carried the Oxford-Cambridge branch over the main lines, there will be physical connection from the Euston-Carlisle main line north of Bletchley, near the existing Denbigh Hall Signalbox (located where the A5 trunk road passes under the main line), to the man flyover.

Approach Embankments

The three approaches to the flyover will consist of earth embankments contained by retaining walls where there is insufficient width of land available for a natural embankment. On the Oxford side the flyover will be approached by a viaduct of five spans of 50 ft.-60 ft.; on the Cambridge side by a viaduct of seven spans of 40 ft.-50 ft. and from the North by two spans where the existing Cambridge branch is crossed.

The main portion of the flyover will consist of seven spans of 56 ft. with two special spans over the existing Buckingham-Fenny Stratford main road. These spans will be 85 ft. and are bounded by two spans of 50 ft. 6 in. This provision has been made for a future road widening scheme.

In situ piles will support the piers which will carry pre-cast pre-stressed concrete deck units. The total length of the viaduct is 1,358 ft.

East Indian Railway Annual Dinner

The essential role of the consulting engineer: Nigerian Railway benefits by Indian experience

The 55th annual dinner of the East Indian Railway Officers' Association was held in the Connaught Rooms, London, W.C.2, on September 24. The chair was taken by Mr. J. S. Tritton, a consultant and former partner of Messrs. Rendel, Palmer & Tritton (formerly Consulting Engineers to the E.I.R.).

Mr. Tritton, after the Loyal Toast, proposed that of the East Indian Railway. He pointed out the importance of the rôle of the consulting engineer in interpreting the needs of railways overseas to the manufacturers in the West, in keeping those railways abreast of new developments in equipment and techniques, and in maintaining personal contacts with all concerned.

As an instance of the difficulty of the task of the consulting engineer, he described his experiences at the beginning of the last war, when he had visited locomotive builders in the U.S.A., to arrange for construction of steam locomotives for the Indian State Railways. The interpretation of Indian requirements to manufacturers familiar with American practice and with the needs of American railways, however adaptable these builders might be, had not been easy. The Baldwin Locomotive Works, for instance, was by that time unaccustomed to build engines with a tractive effort of only 38,000-40,000 lb. Mr. Tritton spoke on various differences between Indian and U.S.A. practice. He also described the difficulties in building locomotives in the U.S.A. for India to comply with the "lend-lease" agreement.

Mr. J. A. Bell, a former General Manager of the E.I.R. and chairman of the Dinner Committee of the E.I.R. Officers' Association, proposed the health of the guests.

Useful Indian Railway Experience

Colonel Sir Ralf Emerson, Chairman of the Nigerian Railway Corporation, former Chief Commissioner of Railways, India, and formerly General Manager of the G.I.P.R., replied. He remarked on the good work which former officers of Indian railways, and one loaned from the Indian State Railways, had done and were doing on the Nigerian Railway. Their experience in India had afforded them knowledge of a great variety of railway work, which was put to good use in Nigeria. The subjects included systematic dealing with claims, stopping ticketless travel, and the problem of building a railway over black cotton soil.

Mr. Bell thanked Mr. R. C. Harvey for his efficiency and for the hard work he had put in in organising the dinner. Referring to the efforts being made to place a replica of the insignia of the East Indian Railway Regiment, Auxiliary Force of India, in the Indian Army room of the museum at the R.M.A., Sandhurst, he said that progress was being made, but that he would ask for support in due course.

Mr. Harvey pointed out that the members present that evening were greater than in previous years.

Mr. Tritton, concluding the proceedings, said that they hoped that Mr. F. C. Badhwar, former Chairman of the Railway Board, would preside at next year's dinner.

Those present were:—

Messrs. J. W. Agabeg, H. J. Allinson, K. O. Bathgate, J. A. Bell, C. A. Beard, E. P. Blake, G. W. Browne, C. N. Burns, D. D. Cruickshank, A. C. Ducasse,

J. M. Fenton, A. Gemmell, J. C. Gibson, R. H. Goodman, J. Grove-White, A. R. Gundry,

C. J. Hall, J. Hannah, Sir Hugh Hannay, Messrs. R. C. Harvey, J. R. Hemsley, E. H. B. Heysham, D. H. Hughes, R. G. Hughff,

H. L. Kelly, J. C. Lamb, T. T. Lambe, L. T. Madnani, K. B. Mathur, Sir Robert Marriott, Messrs. F. G. S. Martin, G. H. Montgomery, P. C. Mukerjee, D. H. Murray,

H. A. Oakley, R. S. Oakley, Captain E. M. Padwick, Messrs. J. A. Potts, J. F. Pegg, H. W. Puttick,

D. D. Roberts, G. W. N. Rose, R. Saunders-Jacobs, O. R. Tucker, L. D. J. Turnbull, A. B. Turner, A. V. Venables, R. M. Watson.

Guests: Messrs. D. C. Brown, L. Browning, H. R. Burkinshaw, H. P. Burman, N. Calder, P. H. S. Drew, Col. Sir Ralf Emerson, Messrs. J. H. Gundry, H. F. Merrington, W. J. A. Moore, R. R. Parker, R. G. Smith, A. K. Southern, A. T. Stephens, A. Sykes.

Reorganisation of Bar Handling and Storage at Steelworks

A substantial increase in the Bar Mill output at the River Don Works of the English Steel Rolling Mills Corporation Ltd. has required a complete reorganisation of the bar handling, transportation, and storage system.

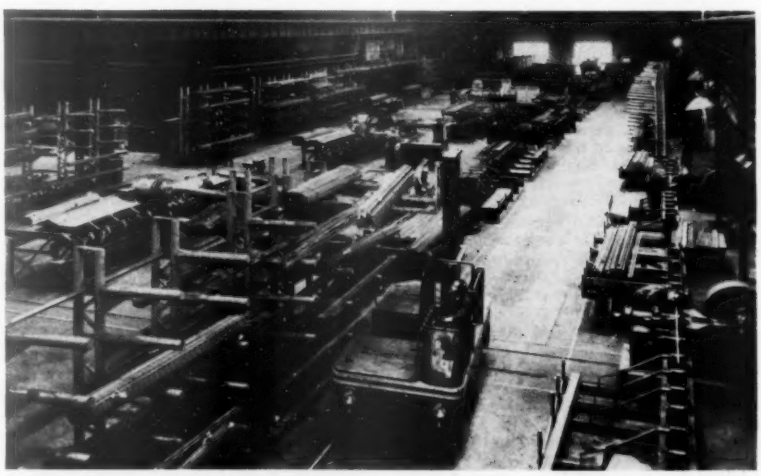
Much of the weekly output of 650 tons is being supplied to railway equipment and locomotive manufacturers in the form of springs and in a variety of bar forms. The bars are supplied in rolled or ground finish in sizes ranging from ¼ in. to 4¾ in. dia. × 30 ft. long, and in a variety of flats, square, and special sections.

Racks and Fork-lift Trucks

A complication in the handling and storage problem arises from the wide range of material specifications required.

A major factor in the reorganisation is the installation by Tubewrights Limited of six-tier bar racks which are loaded and unloaded by Irion side-operating fork-lift carriers. This enables any required bundle to be selected and handled without disturbing other stock. Fork truck transportation has also permitted the use of a large storage area not accessible to the overhead cranes previously used.

After cutting to length, the hot rolled bar is transported by carriers to the loading tables of the reeling machines for straightening and scale removal. Reeling is followed by heat treatment and centreless grinding. After inspection the bars are transported to the dispatch bay or to the warehouse.



New bar racking and handling equipment in English Steel Corporation reeling department at River Don Works, Sheffield

New Goods Depot at Liverpool Spekeland Road

The new goods depot at Liverpool Spekeland Road, London Midland Region, work on which began in 1957, has now been completed and the depot is in full operation. Its opening marks a further step in a general scheme for the complete reorganisation of goods handling in the Liverpool and Birkenhead area.

Spekeland Road now deals with outgoing small consignments which have hitherto been dealt with at Edge Hill, Liverpool and will contribute to acceleration in handling traffic to and from Liverpool. Edge Hill depot now handles only incoming consignments, and previous congestion will be eliminated.

The Spekeland Road shed is 620 ft. long, 103 ft. 9 in. wide and 24 ft. high. It covers an area of approximately 64,000 sq. ft. The shed is open-ended and the sides are covered to within 7 ft. of ground level.

Steel and Concrete Roof

The roof spans the complete width of the shed and is supported on post-stressed concrete frames spaced at 20-ft. centres. These frames are designed as inverted Ts. The height of the stem varies between the supports and the centre.

The inverted table of the T forms a walkway and gutter and supports the glazing between each frame. The main units of the T were pre-cast in approximately 9-ft. lengths, which were assembled

on scaffolding and then stressed together by means of steel cables to form an integral unit. The soffit is a vertical curve rising approximately 4 ft. at the crown. The two end frames are of different design; they are constructed with aprons to provide gables, the undersides of which are 15 ft. above rail level. In all, 30 intermediate frames were erected and post-stressed in position in 12 weeks.

The clear span of 14 ft. between adjoining frames is covered with patent glazing, giving a total glazed area of over 43,000 sq. ft. or approximately 67 per cent of the clear area. The sides of the shed are covered with asbestos cement sheeting except for the bottom 7 ft., which is open.

One hundred and sixteen wagons can be set under cover on four sidings, the roadways alongside being paved; and traffic is loaded direct from road vehicle to wagon, with assistance when required of a mobile crane. Vacuum testing plant and equipment has been provided and a portable weighing machine is available for test weighing of traffic.

The scheme also involved the re-allocation of the sidings in the depot to accommodate the coal and full load goods traffic and for reception and marshalling purposes; the provision of a new twin road vehicle weighbridge, new entrance gates and paved roadways; improved lighting; and office and other accommodation and facilities for the staff.

The shed eventually, will deal also with the forwarded Liverpool "town" sundries at present passing through Birkenhead, Morpeth Dock Goods Station, whilst the Liverpool town received sundries now dealt with by Morpeth Docks Goods Station will be dealt with at Edge Hill shed.

Staff and Labour Matters

B.T.C. Work Study

The British Transport Commission has published a booklet to its staff dealing with the development of work-study techniques on British Railways and in other branches of the Commission's undertaking.

The principle of work study has been agreed between trade union leaders and representatives of the British Transport Commission. The British Railways Productivity Council, on which both unions and management are represented, states:—

"The Council agree that planned productivity through work-study can play an important part in increasing efficiency in British Railways. It has been demonstrated to the Council that the planning of higher productivity by work-study provides a satisfactory means of determining the best way of doing a job and also affords a basis for financial incentive schemes. First, by method improvement, management itself at all levels is subject to a critical examination of its special functions, its weaknesses are pinpointed and necessary remedies indicated.

"Ways of doing work can be improved resulting in more effective use of materials, plant, and equipment and manpower.

"Secondly, it is possible to devise sound labour control systems upon which rational financial incentive bonus payments can be made on the basis which gives the staff concerned a fair share of the economies resulting from planned productivity."

The Commission is providing essential training for the staff in work-study and schemes are being developed throughout the country. Before schemes are introduced there is full discussion locally with the accredited representatives of the staff.

Railway Pay Review

The National Union of Railwaymen in the current issue of the *Railway Review* has announced its reasons for rejecting the proposed terms of reference to the Independent body which will undertake the inquiry into railway pay and is seeking a meeting with Sir Brian Robertson, Chairman of the British Transport Commission, in an attempt to resolve the matter. This meeting, at which the other two railway unions, the A.S.L.E. & F. and the T.S.S.A., will be represented will take place on October 14.

The Executive of the N.U.R., after considering the recommendations of a joint sub-committee comprising representatives of the three trade unions and of the B.T.C., are set up to draft the terms of reference, decided that these proposals were not acceptable as they did not contain provision for recommendations to be made on "what rates of pay are necessary to secure an efficient railway service fairly remunerated in comparison with staffs of other nationalised industries and good private employers." Railway Staff National Tribunal Decision No. 21, which dealt with the last pay claim for railway salaried and conciliation staff, stated that basic railway rates of pay were low in comparison with those of outside industries which had been cited during the hearing. The Union Executive felt that a report of an independent body which after setting out the facts was limited to "general observations" would not meet the situation.

The terms of reference recommended by the Joint Sub-Committee included the following:—

(a) To conduct an investigation into the relativity of pay of salaried and conciliation staff in British Railways covered by the machinery of negotiation for railway staff with the pay of staff in other nationalised industries, public services, and appropriate private undertakings, as agreed between the parties or on the instigation of the independent body, where reasonable and useful comparisons can be made, and, in relation to any such comparisons:—

(i) to establish the degree of job comparability;

(ii) to ascertain the rates of pay and such other emoluments of the jobs compared as may be properly taken into account; and

(iii) to take account of all such other factors as the body may consider relevant in assessing the comparability of the jobs.

(b) To present to the Commission and the three railway trade unions with as little delay as possible a report setting out objectively the ascertained facts, together with such general observations and conclusions as they may consider appropriate on matters within the terms of reference.

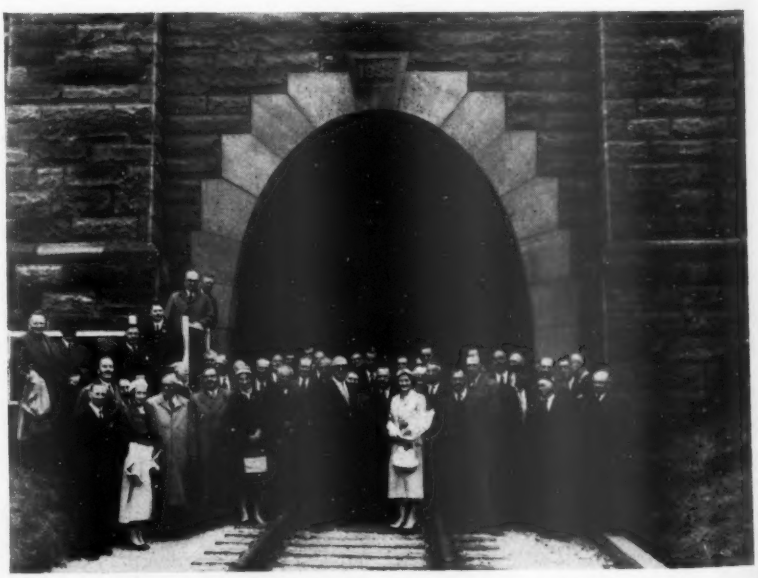
In conducting their examination the independent body will pay due regard to the existing railway wages and salaries structure and may draw attention to any feature of the structure which they consider should be brought to the notice of the parties.

No decision has yet been reached as to the constitution of the independent body.

GLOUCESTER RAILWAY CARRIAGE & WAGON CO. LTD. RESULTS.—Group net profits of the Gloucester Railway Carriage & Wagon Co. Ltd. for the year ended May 31, 1958, amounted to £227,239 (£199,357). Net profit attributable to the company and retained by subsidiaries was £27,871 (£30,984). A final dividend of 10 per cent has been recommended, making 15 per cent for the year.

Re-lining of Whitehaven Tunnel Completed

(*See article on page* 424)



New portal at Corkicle, showing Mr. J. Taylor Thompson, Chief Civil Engineer, London Midland Region, with past and present members of the staff engaged on the reconstruction work

Contracts and Tenders

Rolling stock for the Nigerian Railway Corporation

The Crown Agents have placed the following orders for rolling stock for the Nigerian Railway Corporation:—

Birmingham Railway Carriage & Wagon Co. Ltd.: seven first and second class sleeper coaches and two third class brake coaches

Charles Roberts & Co. Ltd.: eight passenger brake vans and 100 low-sided bogie wagon bodies and underframes

Metropolitan-Cammell Carriage & Wagon Co. Ltd.: 75 bogie low-sided wagons complete

Hurst Nelson & Co. Ltd.: 50 25-ton timber bodied covered goods wagons.

Netherlands Railways has placed an order with Leyland Motors Limited for 30 single-deck motor-buses at a cost of some £1,000,000.

British Waterways has placed an order with Charles Hill & Sons Ltd., Bristol, for the supply and installation of two pairs of replacement gates for use at the entrance to Sharpness Docks and the Gloucester & Sharpness Canal from the River Severn Estuary. This entry is gained by means of a tidal basin and lock and is controlled altogether by three pairs of gates. The work will involve the underwater refacing of the sills as necessary and to avoid disruption of waterways traffic this will be carried out by the vertical limpet dam and tunnel method.

An order has also been placed with Thos. Smith & Sons (Rodley) Ltd., Rodley, Leeds, for three electric 3/6-ton quay cranes for use at "D" and "F" Quays, Regents Canal Dock, London, in replacement of existing obsolescent hydraulic equipment. The new cranes, for which quay-length tracks will be installed, will have 65-ft. jibs to facilitate overside working to barges.

British Railways, London Midland Region, have placed the following contracts.

Jerram & Co. Ltd., Derby: steam heating installation, stripping shed, Locomotive Works, Derby

Young, Austen & Young Limited, Liverpool 3: heating, cutting shop, and superheater element shop, Crewe

Harbour & General Works Limited, Westminster, S.W.1: substructure pavings, and trackwork, new district electric depot, Longsight, Manchester

C. A. Horton Limited, Brierley Hill, Staffs: additional span to bridge 13 to accommodate new roadway for Worcestershire County Council improved scheme at Halesowen

Edward Wood & Sons Ltd., Derby: new transformer substation, carriage & wagon works, Derby

Truswell & Son Ltd., Newcastle-under-Lyme; hot water heating and mechanical ventilation at telecommunications centre, Crewe

Simon-Carves Limited, Cheadle Heath, Stockport: alterations to bridges, Stockport to Manchester line.

British Railways, North Eastern Region, has placed the following contracts.

Wm. Birch & Sons Ltd., York: concreting floor of No. 3 loco. shed, York North Motive Power Depot

L. C. Abdale Building Contractors Limited, Darlington: reconstruction of up and down platforms, Horden Passenger Station.

British Railways, Western Region, have placed the following contracts:—

Smith Bros. Construction Ltd., Birmingham, 11: erection of a staff association institute at Kidderminster, and accommodation for the carriage cleaning staff at the running & maintenance depot at Tyseley, Birmingham

Sir Robert McAlpine & Sons (South Wales) Ltd., Port Talbot, Glam.: doubling the Ogmore Valley Extension line, the provision of exchange sidings, the reconstruction of the bridge under the line at 3m. 5ch., the construction of an amenities block and other work to be carried out at Margam Marshalling Yard, Port Talbot

British Insulated Callender's Cables Limited, Belvedere, Kent: supply, installation, testing, connecting, and setting to work of electric lighting facilities at Margam Marshalling Yard, Port Talbot

Lee, Beesley & Co. Ltd., Oystermouth Road, Swansea: supply, installation, testing, connecting and setting to work of electric lighting facilities at the amenity buildings and the sorting sidings signalbox at Margam Marshalling Yard, Port Talbot

W. H. Streeter Limited, Hampton, Middx.: construction of earthworks, examination pit, drainage, fuel storage depot, amenities block, and retaining wall in connection with the provision of fuelling and inspection facilities for diesel railcars at West London carriage sidings between Acton and Westbourne Park Stations

Vic Hallam Limited, Langley Mill, Nr. Nottingham: provision and erection of the superstructure of a new signalbox at Honeybourne West Loop.

The Special Register Information Service, Export Services Branch, Board of Trade, has received calls for tenders as follow:—

From South Africa:

27 items of ferrous overhead track equipment fittings including eye bolts, thimbles, tower hooks, earth wire brackets, earth wire clamps, steady tube sockets, clevis fittings, clevis pins, contact wire ending cones, cross span fittings, steady arms, hockey sticks, link plates double suspension clamps, single suspension clamps, strain clamps, turnbuckles, and clips.

The issuing authority is the Stores Department, South African Railways. Bids in sealed envelopes, endorsed "Tender No. C. 7429: Ferrous Overhead Track Equipment Fittings," should be addressed to the Chairman of the Tender Board, P.O. Box 7784, Johannesburg. The closing date is October 17, 1958. Local representation is essential. The Board of Trade reference is ESB/23164/58.

(*a*) 1,120 malleable cast iron vacuum hose couplings ¾-in. dia.

Alternatively

(*a*) 1,120 aluminium alloy hose couplings ¾-in. dia.

(*b*) 1,000 malleable cast iron vacuum hose coupling 1½-in. dia.

Alternatively

(*b*) 1,000 aluminium alloy vacuum hose couplings 1½-in. dia.

(*c*) 34,000 malleable cast iron vacuum hose couplings 2-in. dia.

Alternatively

(*c*) 34,000 aluminium alloy vacuum hose couplings 2-in. dia.

The issuing authority is the Stores Department, South African Railways. Bids in sealed envelopes, endorsed "Tender No. K. 7392: Vacuum Brake Gear (Metal Parts)" should be addressed to the Chairman, The Tender Board, P.O. Box 7784, Johannesburg. The closing date is October 24, 1958. Local representation is essential. The Board of Trade reference is ESB/23306/58.

From Portuguese East Africa:

1 portable locomotive cleaning plant.

The issuing authority is the Ports, Railways & Transport Department, Lourenco Marques. The tender No. is A/CFB/1/1-178/958. A provisional deposit of Esc: 2,500 must be made by tenderers. The closing date is November 17, 1958. Local representation is essential. The Board of Trade reference is ESB/23768/58.

32 items of spares for locomotives including wheels and axles, bogies, cylinder blocks, and connecting rods.

The issuing authority is the Ports, Railways & Transport Department, Lourenco Marques. The tender No. is 192/58. A provisional deposit of Esc: 180,000 must be made by tenderers. The closing date is November 18, 1958. Local representation is essential. The Board of Trade reference is ESB/23763/58.

From India:

78,000 brake shoe clips, steel, class II, for motor and trailer bogies of EMU stock

26,000 back plates, steel, class II, for brake shoe of electric stock motor bogies

89,000 back plates, steel, class II, for brake blocks of Schlieren and trailer coaches.

The issuing authority is the Director of Supplies & Disposals (Purchase Branch). The tender No. is BOM/E-1/4231-J. Bids should be sent to the Director of Supplies & Disposals (Purchase Branch), Graham Road, Ballard Estate, Bombay. The closing date is October 10, 1958. Local representation is essential. The Board of Trade reference is ESB/23577/58.

Further details regarding the above tenders, together with photo-copies of tender documents, can be obtained from the Branch (Lacon House, Theobalds Road, W.C.1.).

ROLLING STOCK AND CONTAINERS AT BISHOPS STORTFORD TRADES FAIR.—From September 27 to October 4, in conjunction with the Bishops Stortford Trades Fair, British Railways, Eastern Region, is exhibiting rolling stock and containers at Bishops Stortford Station. A wide variety of wagons, vans and containers specially designed for conveying particular types of merchandise is on display. They include a Palbrick wagon for conveying refractory and firebrick traffic, an Air-Slide wagon for cement and similar materials, a bulk grain wagon, a Shock Van for brittle goods particularly susceptible to damage in transit, and an insulated Fish Van. Visitors can see the many types of containers available to meet traders' requirements.

Notes and News

Five-Hundredth Metropolitan Cammell Railcar for British Railways.—The Metropolitan Cammell Carriage & Wagon Co. Ltd. has delivered its five-hundredth railcar to British Railways. It is one of the vehicles forming two-, three-, or four-car sets supplied by the firm since the inception of the diesel railcar programme under the modernisation plan.

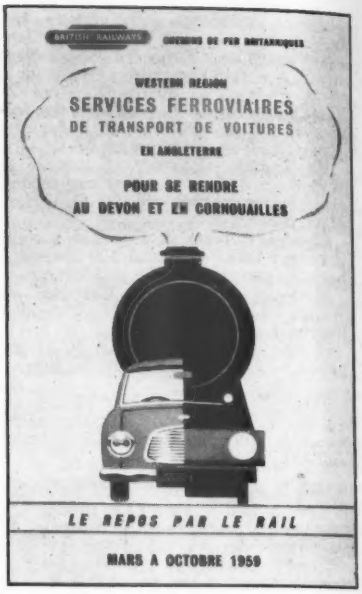
Verdict of Manslaughter on Foreman of Track Gang.—At the inquest on September 22, of a platelayer who was killed by an express train while working with a gang on the line at Hadley Wood Station, Eastern Region, British Railways, a jury returned a verdict of manslaughter against the foreman of the gang. They found that the platelayer's death was due to the gross and culpable negligence of the foreman. The coroner committed him for trial at Hertfordshire Assizes.

Institute of Transport Presidential Address.—Major-General G. N. Russell, General Manager & Chairman of the Board of Management, British Road Services, and Member of the Eastern Area Board, British Transport Commission, will deliver his Presidential Address to the Institute of Transport, at the inaugural meeting of the 1958-59 session, to be held on Monday, October 13, at 5.45 for 6.15 p.m. in the Jarvis Hall, 66, Portland Place, London, W.1.

Eastern Region Staff Thanked for Work after Storm.—The General Manager of the Eastern Region, Mr. H. C. Johnson, has sent a special message of thanks to all staff of the Region who were concerned in helping the travelling public during and after the recent storm which affected services in Essex. All the reports he had received, he has stated, expressed nothing but praise for the help and courtesy extended to the public who were stranded or badly delayed by the floods. Reference to the floods and to the subsequent restoration work was made in last week's issue.

Western Region Brochure in French for Paris International Motor Show.—For the Paris International Motor Show, which opened on October 2, British Railways, Western Region, has prepared a special brochure in French, describing how it is possible for a visitor from the Continent, after bringing his car to London, to have it conveyed by rail from London to South Devon (Newton Abbot) and Cornwall (St. Austell). The car tourist services provided by the Region are given in full. The brochure lists inclusive rates for these services, which have proved popular with motorists wishing to avoid the long journey by road to West Country holiday centres. The cover of the brochure, which is the subject of editorial comment on page 414, is shown in the accompanying illustration.

Good Running by London-Sheffield Pullman Expresses.—"The Master Cutler" and other trains in the new Sheffield-London express Pullman services of British Railways, Eastern Region, maintained good punctuality during their second week of operation, ending on September 26. Nineteen of the 20 diesel-hauled expresses (two each way daily, Monday to Fridays only) arrived either at the right time or before time. The one occasion on which delay occurred was the result of a goods train failure near Sheffield. During the week ended September 26, the new trains are gaining in popularity. More than 1,400 passengers were carried, an increase of 200 on the previous week.



Cover of Western Region brochure produced for Paris Motor Show

Prime Minister of Nigeria Visits the Vulcan Foundry Limited.—Mr. M. A. Tafawa Balewa, the Federal Prime Minister of Nigeria, accompanied by Dr. E. M. L. Endeley, Premier of the South Cameroons, and a party of Federal Ministers, visited establishments of the English Electric Co. Ltd. in Lancashire on September 26. During the morning he toured the Vulcan Foundry locomotive works at Newton-le-Willows, near Warrington, where he inspected locomotives under construction for British Railways, Spain, and South Africa. The locomotives being built for the Spanish National Railways are 3,600-h.p. 3,000-V. d.c. electric units, and those for South African Railways are type "5 E" 2,000-h.p. 3,000-V. electric locomotives.

Western Region Cinema Coach on Private Charter Train.—A cinema coach was provided by the Western Region of British Railways on a special train from Paddington last Wednesday, for Sudbrook, Monmouthshire. This is the first occasion on which a cinema coach had been provided by British Railways for a special party. The train was chartered by Wiggins, Teape Limited to take 120 guests from London to their Sudbrook Pulp Mills. The cinema coach, which has been adapted from a standard dining car, has seating for 30. Four separate shows were given during the journey. Films consisted of publicity features provided by the British Transport Commission and Wiggins, Teape Limited.

Tourist Traffic in Britain.—About 250,000 overseas visitors arrived in Britain in July, according to the British Travel & Holidays Association. This total is almost exactly the same as that for July

Minister of Transport at Transportation Club

Mr. Harold Watkinson, Minister of Transport & Civil Aviation, who is President of the Transportation Club, visited the club on September 23 and took luncheon with the Council and Past Chairmen. Above (from left to right): (Front row): Mr. E. J. Morris, Member of Council; Mr. T. W. Royle, Past Chairman; Mr. Harold Watkinson; Mr. D. H. Handover, Chairman; Mr. K. W. C. Grand, Past Chairman; Major-General G. S. Szlumper, Member of Council and Past Chairman: (Back row) Lt.-Colonel A. D. Mulligan, Secretary; Messrs. W. H. Goodhind, F. L. Castle, B. W. C. Cooke, H. Wilmot, A. J. Webb, S. H. James and S. G. Hearn, Members of Council

last year. There was a substantial increase in visitors from the U.S.A., of 11 per cent. The failure to achieve an overall increase in the month was due to a drop in traffic from European countries, particularly from France, where that country's currency limitations have affected numbers, and Belgium, where the Brussels Fair could account for fewer Belgian visitors. Traffic from Europe fell by eight per cent., from 154,300 to 142,100, but the number of visitors from Germany continued to increase. The July total brings tourist traffic to Britain for the first seven months of this year to almost 750,000, 5 per cent. more than for the corresponding period of 1957.

Forrestfield Goods Depot Closed.—With the approval of the Transport Users' Consultative Committee for Scotland, Forrestfield Goods Depot, on the Airdrie-Bathgate-Edinburgh line, was closed from October 1. Alternative rail facilities are available at Caldercruix Station.

Typhoon Severs Rail Communications in Japan.—Road and rail communication between Tokyo and Yokohama was cut for 24 hr. after a typhoon, described as the worst for 24 years, struck Tokyo and the districts to the south and west on September 26. Continuous rain for 24 hr. made rivers burst their banks, and caused landslides. More than 15 in. of rain fell in the city. For the first time since the last earthquake all main-line railway services from Tokyo were cancelled. No railway accidents are reported.

Observation Coach for Private Parties.—The observation coach shown in the accompanying illustration formerly ran in the all-Pullman "Devon Belle" express of the Southern Region. It was used for the first time this year on the North Wales Land Cruise train of the London Midland Region. It is now being made available to private parties on all parts of the London Midland Region during the winter. The vehicle was included in the cruise train in July. It accommodates 24 passengers and was fully booked on every trip during the summer season. A private cocktail bar is installed at the front end.

Western Region Introduces Further Diesel Railcars.—British Railways, Western Region, will introduce multiple-unit diesel trains, on October 6, on the Twyford to Henley-on-Thames and the West Drayton to Staines branches. They will replace the former G.W.R. diesel railcars now working on the Henley, and the steam push-and-pull service on the Staines branches. The new trains, second class only, were built by the Gloucester Carriage & Wagon Co. Ltd. and are of the type recently placed in service elsewhere on British Railways. The 7.48 a.m. and 8.43 a.m. from Henley to Paddington and 5.15 p.m. and 6.15 p.m. services from Paddington will continue to be operated by steam trains and will retain first and second class accommodation.

Mechanical Equipment in Civil Engineering Work.—In a letter to the *Sunday Times*, Sir Wavell Wakefield, M.P., referred to a photographic illustration in that journal of two men working with pick and shovel to repair the damage to the main Southend line done by the storm of September 5. He suggested that such manual work was uneconomic, and could be done mechanically. In a reply, Sir J. Landale Train, who retired at the end of last month from his position as Member of the B.T.C., has pointed out that the mechanical excavators with skimming equipment were ordered out from a plant hire firm in the early hours of September 6 and were got to the site through floods and soft ground with the greatest difficulty. The men depicted with pick and shovel were only two out of a large number of men who were called out also in the early hours in order to repair at least one line which was interrupted in numerous places so that a ballast train and the mechanical equipment could be employed on the site. He points out that by 8 a.m. on September 7 550 tons of clay had been cleared and loaded at this one site alone, although the line could not be opened for traffic until 5 o'clock that evening to allow the repaired track to consolidate.

Observation car of the former "Devon Belle" equipped with private cocktail bar and available tn the London Midland Region for hire by private parties

Electronic Computer Installation in the N.E. Region.—At the inauguration ceremony in the offices of British Railways, North Eastern Region, at Stooperdale, Darlington, Mr. T. H. Summerson, Chairman of the North Eastern Area Board of the British Transport Commission, put into operation the new Hollerith electronic computer installation by pressing the switch on the console. The accompanying illustration shows him with Mr. H. A. Short, General Manager of the Region, and Mr. J. Bowman, Member of the North Eastern Area Board.

Crossley Bros. Ltd. Results.—The final deferred ordinary dividend of Crossley Bros. Ltd., diesel and gas engine manufacturers, is to be 9 per cent, making an unchanged total dividend of 12 per cent for the year ended April 30. Group trading profits rose to £445,217 (from £398,587), but after all charges, including tax of £144,765 (£131,135), net profits were £107,764 (£145,664, including a tax overprovision of £33,357).

Medical Coach for the Eastern Region.—The Eastern Region of British Railways has placed a medical examination coach into service. It will be moved anywhere in the Region as required for examinations by railway medical officers. At first the coach will be used principally at Harwich, Parkeston Quay and Cambridge, and to a lesser extent at Ipswich

Mr. T. H. Summerson inaugurating the Hollerith computer at the North Eastern Region offices at Stooperdale, Darlington

and Norwich. The six medical centres in the Region will continue to function as at present, though at some of them the number of examinations will be reduced.

Withdrawal of Foxfield-Coniston Passenger Service.—Passenger trains between Foxfield and Coniston, in the London Midland Region, will be withdrawn and Broughton-in-Furness, Woodland, Torver and Coniston stations closed for passenger traffic from October 6. Passengers should book to Foxfield and thence by buses of Ribble Motor Services Limited. Parcels and passenger train merchandise will be dealt with at Foxfield and the present arrangements for goods train traffic will continue.

Forthcoming Meetings

October 4 (*Sat.*).—Railway & Canal Historical Society (North Western Group), in the Oddfellows Institute, Chestergate, Stockport, at 6.30 p.m. Paper on "Railway history in Acts of Parliament," by Mr. C. R. Clinker (President).

October 7 (*Tue.*).—Permanent Way Institution, Leeds & Bradford Section, at the British Railways Social & Recreation Club, Ellis Court, Leeds City Station, at 7 p.m. Paper on "The Industrial Injuries Act," by Dr. S. Hulme, Medical Officer of British Railways, Southern Region.

October 7 (*Tue.*).—South Wales & Monmouthshire Railways & Docks Lecture & Debating Society, in the Angel Hotel, Westgate Street, Cardiff, at 6.30 p.m. "The history of the Cunard Line," by Mr. A. D. Lobley, Publicity Manager, Cunard Steamship Co. Ltd.

October 8 (*Wed.*).—Railway Correspondence & Travel Society, West Midlands Branch, at the Engineering Centre, Birmingham (outside New Street). Mr. R. Shenton will give an illustrated description of his railway travels in Finland.

October 9 (*Thu.*).—British Railways, London Midland Region, Lecture & Debating Society, in the Clerical Staff Dining Club, Cardington Street, Euston, N.W.1, at 5.45 p.m. Domestic debate "That in their effort to survive and flourish the railways must discard tradition and conservatism." Chairman, Mr. A. J. Pearson, Assistant General Manager. Leading speakers, Mr. R. L. E. Lawrence and Mr. W. B. Carter.

October 10 (*Fri.*).—Railway Correspondence & Travel Society, West Riding Branch, at the Railway Institute, York, at 7.30 p.m. Paper on "The growth, development, and decline of the Hull & Barnsley Railway," by Mr. D. R. Smith.

October 11 (*Sat.*).—Railway Correspondence & Travel Society, South of England Branch, at the Motive Power Depot Social Hall, Eastleigh, at 6.30 p.m. Paper on "Somerset coalfield traffic," by Mr. R. Dyer.

October 11 (*Sat.*).—Railway Correspondence & Travel Society, Sussex & Kent Branch, at The Railway Hotel, Brighton, at 7.15 p.m. Film show "The railways of Australia and New Zealand."

October 11 (*Sat.*).—Permanent Way Institution, East Anglia Section, at Norwich, at 2.15 p.m. An address by the President (illustrated).

October 13 (*Mon.*).—Institute of Transport, at the Jarvis Hall, 66, Portland Place, W.1, at 5.45 for 6.15 p.m. Presidential address.

October 14 (*Tue.*).—Railway Correspondence and Travel Society, East Midlands Branch, at the N.C.S. Guild Room, Toll Street, Nottingham, at 7.30 p.m. Paper on "The railways of the East Midlands," by Dr. J. M. Wise.

October 15 (*Wed.*).—Institution of Locomotive Engineers, at the Institution of Mechanical Engineers, 1 Birdcage Walk London, S.W.1, at 5.30 p.m. Paper on "The mechanics of the train in the service of railway operation," by Mr. S. O. Ell.

October 16 (*Thu.*).—Diesel Engineers' & Users' Association, at The Memorial Hall, the Institute of Marine Engineers, 76, Mark Lane, London, E.C.3, at 2 p.m. Annual general meeting.

October 16 (*Thu.*).—British Railways, Western Region, Lecture and Debating Society, in the Headquarters Staff Dining Club, Bishop's Bridge Road, Paddington, W.2, at 5.45 p.m. Paper on "Human relations in productivity—the spirit of service," by Mr. John Ryan, Member Western Area Board, British Transport Commission.

October 17 (*Fri.*).—Railway Correspondence & Travel Society, London Branch, at the Railway Clearing House, Eversholt Street, London, N.W.1, at 7.15 p.m. Paper on "Dugald Drummond," by Mr. T. Clyde Britten.

Railway Stock Market

There has been a moderate reaction in stock markets, caused by financial results showing lower earnings. This is regarded in the City merely as a pause in the upward movement in share values.

Railway securities showed few movements of importance. Canadian Pacifics at $55 were maintained at the same level as a week ago; the preference stock at 54¼ was also the same as a week, ago, but the 4 per cent debentures eased from 67¼ to 66¼. White Pass shares receded from $14½ to $14.

Antofagasta ordinary and preference stocks were maintained at 14 and 30 respectively: the 5 per cent (Bolivia) debentures, too, were the same as a week ago (96½).

Nyasland Railways shares rose further to 12s. 6d.: the 3½ per cent debentures were 65½. West of India Portuguese capital stock was 77½ and the 5 per cent debentures 67½.

Elsewhere, International of Central America common shares were quoted at $19½ and the preferred stock at $114. Mexican Central "A" bearer debentures were fractionally higher at 71½. Costa Rica ordinary stock was 16½ and the second debentures 90½. United of Havana second income stock kept at 6¼ and the consolidated stock was quoted at 1½.

Financial results with maintained dividends tended to draw attention to the favourable yields ruling on shares of locomotive builders and engineering companies, and buyers were rather more in evidence. Best prices were not held, but some gains were recorded on balance. Charles Roberts 5s. shares have risen from 9s. 4½d. to 9s. 10½d. in response to the results and maintained 15 per cent dividend. Gloucester Wagon 10s. shares have been prominent with an advance from 15s. 10½d. a week ago to 16s. 9d. on the sharp advance in profits, which increases earnings on the ordinary shares to nearly 35 per cent; the dividend is again 15 per cent.

Beyer Peacock 5s. shares held their recent improvement to 8s. 4½d., but on the other hand, North British Locomotive have reacted from 13s. 7½d. to 12s. 6d. Wagon Repairs 5s. shares moved up afresh from 10s. 3d. to 10s. 7½d. and G. D. Peters from 25s. to 25s 7½d. On the other hand, Birmingham Wagon came back from 18s. 1½d. to 17s. 4½d.

Westinghouse Brake strengthened further from 40s 3d. to 40s. 6d. and T. W. Ward, whose dividend is due shortly, have been maintained at 83s. 6d. Ransomes & Marles 5s. shares held steady at 14s. 7½d. (at which there is a yield of 5½ per cent) on the maintained 15 per cent, and the good impression created by the results, but in addition, the directors have decided to declare a special interim dividend of 2½ per cent for the current year. Guest Keen were better on balance at 51s. 1½d., Davy & United moved up to 71s. 6d. and Babcock and Wilcox have been higher at 50s. 3d. while on the news of the company's latest acquisition and the chairman's statement that another deal is under negotiation, Metal Industries rose to a new peak of 40s. 3d. Ruston & Hornsby lost a few pence at 23s. 3d. In other directions, the 10s. shares of the Dowty Group kept their recent rise to 39s., but there was a reaction in Pressed Steel 5s. shares from 19s. 7½d. to 18s. 9d. Crompton Parkinson 5s. shares moved up from 11s. 6d. to 11s. 10½d., English Electric were well maintained at 58s. 9d. and General Electric at 37s. 6d. Tube Investments at 62s. 3d. have been quite well maintained.

OFFICIAL NOTICES

THE NIGERIAN RAILWAY CORPORATION invites applications for the following post:—

CARRIAGE AND WAGON SUPERINTENDENT

Duties: The officer will be responsible to the Chief Mechanical Engineer for the maintenance of Carriages and Wagons and will be required to take full charge of Carriage and Wagon Workshops and Depots.

Qualifications: Candidates must have considerable experience of managing Carriage and Wagon Workshops on a Railway of standing and must be Corporate Members of the Institution of Mechanical Engineers.

Salary: £2,350 per annum. The appointment on contract will have a gratuity payable on completion at the rate of £39 3s. 4d. for each completed month of service.

Tours: 15 months in Nigeria followed by 15 weeks' leave on full pay.

Quarters: Partly furnished quarters are provided at low rental.

Allowances: There are attractive family, travelling, transport and other allowances.

Send postcard before 21st October, 1958, mentioning the post and this paper for further particulars and application form to:—The London Representative, Nigerian Railway Corporation, Nigeria House, 9 Northumberland Avenue, London, W.C.2.

CORAS IOMPAIR EIREANN.

IRISH NATIONAL TRANSPORT BOARD.

Coras Iompair Eireann invites applications for the position of Chief Accountant.

The post involves a high degree of responsibility and the salary will be commensurate with its importance.

Pension rights attach to the position.

Applicants must have held a position of responsibility in a large scale industrial or public utility undertaking.

Applications, which will be treated with the strictest confidence, should be sent with full particulars to the undersigned not later than 31st October, 1958.

M. J. Hayes,
Secretary.

Kingsbridge Station,
Dublin.
24th September, 1958.

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